ICSE 21

43rd International Conference on Software Engineering

PROGRAM

May 25th – 28th 2021

Co-located events: May 17th – May 24th

Workshops: May 24th , May 29th – June 4th

https://conf.researchr.org/home/icse-2021

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General overview

May 17th – May 24th	May 25th – May 28th	May 24th – June 4th
Pre-conference events	Main conference	Workshops
AST	Opening / Closing	APR
CHASE	Keynotes	BoKSS
Doctoral Symposium	Awards	BotSE
FormaliSE	Town Hall	Cloud Intelligence
ICGSE/ICSSP	Technical Track	DeepTest
ICPC	Journal First	EnCyCriS
MobileSoft	SEIP	GI
MSR	NIER	MET
New Faculty Symposium	SEIS	Q-SE
SEAMS	JSEET	RoSE
TechDebt	Networking	SEENG
	Networking with Sponsors	SBST
	Posters	SEH
	Demos	SEmotion
	Technical Briefings	SER&IP
	SRC	SERP4IoT
	SCORE	SESoS/WDES
		SEthics
		SoHeal
		WAIN
		WETSEB

Co-located events overview

May 17th Monday	May 18th Tuesday	May 19th Wednesday	May 20th Thursday	May 21st Friday
	FormaliSE EVENT WEBPAGE → JOIN SESSION →			
MSR EVENT WEBPAGE → JOIN SESSION (ROOM 1) → JOIN SESSION (ROOM 2) →			**AST** EVENT WEBPAGE → JOIN SESSION →	
MobileSoft EVENT WEBPAGE → JOIN SESSION →			**CHASE** EVENT WEBPAGE → JOIN SESSION (CHASE ROOM)→ JOIN SESSION (CHASE COMMUNITY ROOM)→	
	ICGSE/ICSSP EVENT WEBPAGE → JOIN SESSION →			
	ICPC EVENT WEBPAGE → JOIN SESSION (MAIN ROOM) → JOIN SESSION (SOCIAL ROOM) →			
	SEAMS EVENT WEBPAGE → JOIN SESSION →			
		TechDebt EVENT WEBPAGE → JOIN SESSION →		

Main conference overview

May 25th Tuesday	May 26th Wednesday	May 27th Thursday	May 28th Friday
Opening ceremony OPENING →			**Closing ceremony** CLOSING →
Keynote DARÍO GIL →	**Keynote** MICHAEL LYU →	**Keynote** JEANNETTE WING →	
Meet with DARÍO GIL →	**Meet with** MICHAEL LYU →	**Meet with** JEANNETTE WING →	
Keynote PREM DEVANBU →	**Keynote** ELAINE WEYUKER →	**JSEET Keynote** DAVID GARLAN →	
Meet with PREM DEVANBU →	**Meet with** ELAINE WEYUKER →		
Technical Track Awards and ACM Europe Council Best Paper Award AWARDS →	**Other ACM SIGSOFT Awards** AWARDS →	**ICSE 2011 Most Influential Paper Award** ANDREA ARCURI, LIONEL BRIAND →	**IEEE TCSE Harlan Mills Award** DIETER ROMBACH →
ACM SIGSOFT Outstanding Research Award PREM DEVANBU →		**Meet with** ANDREA ARCURI, LIONEL BRIAND →	**Meet with** DIETER ROMBACH →
		Other ICSE Awards AWARDS →	**Other IEEE TCSE Awards** AWARDS →
			Town Hall TOWN HALL →
Technical Track			
Journal First			
SEIP			
NIER			
SEIS			
JSEET			
Networking			
Posters	**Demos**		
Technical Briefing NLP FOR REQUIREMENTS ENGINEERING: TASKS, TECHNIQUES, TOOLS, AND TECHNOLOGIES →	**Technical Briefing** REACTIVE SYNTHESIS WITH SPECTRA: A TUTORIAL →	**Technical Briefing** DECODING GROUNDED THEORY FOR SOFTWARE ENGINEERING →	**Technical Briefing** ADVANCES IN CODE SUMMARIZATION →
Technical Briefing HANDS-ON SESSION ON THE DEVELOPMENT OF TRUSTWORTHY AI SOFTWARE →		**Technical Briefing** BAYESIAN DATA ANALYSIS FOR SOFTWARE ENGINEERING →	**Technical Briefing** THE SOFTWARE CHALLENGES OF BUILDING SMARTCHATBOTS →
			SRC and SCORE Awards

May 25th overview

Tuesday, May 25th

TIME CEST LIVE	TIME CEST MIRROR	
10:00 – 11:00	22:00 – 23:00	**Opening Ceremony** (10:00 – 10:30) → OPENING CEREMONY **Blended sessions** (10:30 – 11:30) → CODE REVIEW: AUTOMATION; DEVELOPERS: BEHAVIOR; DEEP NEURAL NETWORKS: VALIDATION 1; OBTAINING INFORMATION FROM APP USER REVIEWS 1
11:00 – 12:00	23:00 – 00:00	**Networking** (11:30 – 12:00) → MEET YOUR PEERS **ACM Students Research Competition** (11:30 – 13:30) → SRC: POSTER SESSION 1 (LIVE SCHEDULE ONLY)
12:00 – 13:00	00:00 – 01:00	**Blended sessions** (12:05 – 13:15) → DEEP NEURAL NETWORKS: VALIDATION 2; SEARCH-BASED SE & GENETIC OPERATIONS; DEVELOPERS: GENERAL ISSUES; SOFTWARE REQUIREMENTS **JSEET** (12:05 – 13:05) → TEACHING SOFTWARE QUALITY I
13:00 – 14:00	01:00 – 02:00	**Break 30'** (13:15 – 13:45) **Technical Track Awards and ACM Europe Council Best Paper Award** (13:45 – 14:00) → AWARDS CEREMONY
14:00 – 15:00	02:00 – 03:00	**Keynote** (14:00 – 14:45) → DARÍO GIL **Meet with** (14:45 – 15:15) → DARÍO GIL **Networking** (14:45 – 15:15) → INTRODUCTION TO GATHER.TOWN; COST ACTION NETWORK ON GENDER BALANCE (MIRROR IN MAY 26 AT 22:45 – 23:15); YOGA AND BREATHWORKS (LIVE SCHEDULE ONLY); SE RESEARCH @ HUAWEI (MIRROR SCHEDULE ONLY) **Posters** (14:45 – 15:15) → POSTERS 1
15:00 – 16:00	03:00 – 04:00	**Technical Briefing** (15:00 – 16:15) → NLP FOR REQUIREMENTS ENGINEERING: TASKS, TECHNIQUES, TOOLS, AND TECHNOLOGIES **Blended sessions** (15:20 – 16:15) → QUALITY ASSURANCE; DEEP NEURAL NETWORKS: SUPPORTING SE TASKS 1; OPEN SCIENCE; OBTAINING INFORMATION FROM APP USER REVIEWS 2
16:00 – 17:00	04:00 – 05:00	**Social** (16:15 – 16:35) → GUITAR CONCERT **Blended sessions** (16:40 – 17:35) → VARIABILITY AND PRODUCT LINES; CONTINUOUS INTEGRATION; IDENTIFYING INFORMATION LEAKS; DEVELOPERS: ONBOARDING
17:00 – 18:00	05:00 – 06:00	**Break 15'** (17:35 – 17:50) **ACM SIGSOFT Outstanding Research Award** (17:50 – 18:00) → AWARDS CEREMONY
18:00 – 19:00	06:00 – 07:00	**Keynote** (18:00 – 19:00) → PREM DEVANBU
19:00 – 20:00	07:00 – 08:00	**Meet with** (19:00 – 19:30) → PREM DEVANBU **Networking** (19:00 – 19:30) → COMMUNITY SPEED NETWORKING (LIVE SCHEDULE ONLY); COFFEE CHAT; ICSE IS RUNNING; OPPORTUNITIES AT INVENIA LABS (LIVE SCHEDULE ONLY) **ACM Students Research Competition** (19:00 – 21:00) → SRC: POSTER SESSION 2 (LIVE SCHEDULE ONLY) **SCORE** (19:00 – 21:15) → SCORE FINALISTS (LIVE SCHEDULE ONLY) **Posters** (19:00 – 19:30) → POSTERS 2
20:00 – 21:00	08:00 – 09:00	**Blended sessions** (19:35 – 20:55) → DEEP NEURAL NETWORKS: GENERAL ISSUES; DEVELOPERS: OBSERVATIONAL STUDIES; API: USAGE AND REFACTORING; OPEN SOURCE: PARTICIPANTS' MOTIVATIONS; DEVELOPERS: NAMING METHODS AND VARIABLES **Technical Briefing** (19:35 – 21:50) → HANDS ON SESSION ON THE DEVELOPMENT OF TRUSTWORTHY AI SOFTWARE
21:00 – 22:00	09:00 – 10:00	**Panel** (20:55 – 21:40) → ARE ACADEMICS WORKING ON THE RIGHT PROBLEMS? (LIVE SCHEDULE: 20:55 – 21:40, MIRROR: THURSDAY 27TH 11:00 – 11:45); PASS THE MIC: SUSTAINABILITY FROM AROUND THE GLOBE (MIRROR SCHEDULE ONLY: 08:55 – 09:40)

May 26th overview

Wednesday, May 26th

TIME CEST LIVE	TIME CEST MIRROR	
10:00 – 11:00	22:00 – 23:00	**Keynote** (10:00 – 10:45) → MICHAEL LYU
11:00 – 12:00	23:00 – 00:00	**Meet with** (10:45 – 11:15) → MICHAEL LYU **Networking** (10:45 – 11:15) → COFFEE CHAT; MENTORING CIRCLE (LIVE SCHEDULE ONLY); YOGA AND BREATHWORKS (LIVE SCHEDULE ONLY); OPPORTUNITIES AT INVENIA LABS (LIVE SCHEDULE ONLY); MEET FACEBOOK RECRUITING & RESEARCH (MIRROR SCHEDULE ONLY) **Demos** (10:45 – 11:15) → EVOLUTION 1
12:00 – 13:00	00:00 – 01:00	**Blended sessions** (11:20 – 12:20) → VULNERABILITIES IN ANDROID 1; DEEP NEURAL NETWORKS: QUALITY ASSURANCE; MODEL CHECKING; TOOLS FOR THE PYTHON LANGUAGE; CODE REVIEW: OBSERVATIONAL STUDIES **Social** (12:20 – 12:50) → FLAMENCO LESSON & PARTY 1 (LIVE SCHEDULE ONLY)
13:00 – 14:00	01:00 – 02:00	**Blended sessions** (12:55 – 13:55) → MODULARIZATION AND REUSABILITY; CONFIGURATION OF SOFTWARE SYSTEMS: TESTING; GUI DESIGN; PROGRAMMING: GENERAL ISSUES; DEEP NEURAL NETWORKS: HACKING **JSEET** (12:55 – 13:55) → TEACHING SE IN REAL CONTEXTS **Break 35'** (13:55 – 14:30)
14:00 – 15:00	02:00 – 03:00	**Blended sessions** (14:30 – 15:30) → DEFECT PREDICTION: AUTOMATION 1; SELF-ADMITTED TECHNICAL DEBT; SOFTWARE LOG ANALYSIS; SMART CONTRACTS; HANDLING ECOSYSTEMS OF FORKED PROJECTS **Technical Briefing** (14:30 – 16:45) → REACTIVE SYNTHESIS WITH SPECTRA: A TUTORIAL
15:00 – 16:00	03:00 – 04:00	**Networking** (15:30 – 16:00) → MEET YOUR PEERS; MENTORING CIRCLE; AST INDUSTRIAL COMPETITION (LIVE SCHEDULE ONLY); SE RESEARCH @ HUAWEI (MIRROR SCHEDULE ONLY)
16:00 – 17:00	04:00 – 05:00	**Blended sessions** (16:05 – 17:05) → FUZZING; API: EVOLUTION AND MAINTENANCE 1; OBSERVATIONAL STUDIES: DIFFERENT DOMAINS; MODELS AND DSLS
17:00 – 18:00	05:00 – 06:00	**Break 15'** (17:05 – 17:20) **Other ACM SIGSOFT Awards** (17:20 – 17:30) → AWARDS CEREMONY
18:00 – 19:00	06:00 – 07:00	**Keynote** (17:30 – 18:15) → ELAINE WEYUKER **Meet with** (18:15 – 18:45) → ELAINE WEYUKER **Networking** (18:15 – 18:45) → COFFEE CHAT; MENTORING CIRCLE (MIRROR SCHEDULE ONLY); WAIN'21 (LIVE SCHEDULE ONLY); YOU MIGHT BE STUDYING TECHNICAL DEBT AND NOT KNOW IT (LIVE SCHEDULE ONLY); FACEBOOK LAUNCHES NEW RESEARCH AWARD OPPORTUNITY (LIVE SCHEDULE ONLY) **Demos** (18:15 – 18:45) → VERIFICATION **Industry Case Studies** (18:00 – 21:10)
19:00 – 20:00	07:00 – 08:00	**Blended sessions** (18:50 – 19:50) → TESTING: AUTOMATIC TEST GENERATION; DEVELOPERS: EXPERIMENTS; CODE COMPLETION; SOME BIG COMPANIES' PRACTICES: CASES AT FACEBOOK, GOOGLE & IBM **Panel** (19:50 – 20:35) → WHAT IS A NIER PAPER IN SOFTWARE ENGINEERING?
20:00 – 21:00	08:00 – 09:00	**Blended sessions** (20:40 – 21:40) → SOCIAL EQUALITY AND FAIRNESS 1; Q&A IN ONLINE PLATFORMS: STACK OVERFLOW 1; DEFECT PREDICTION: DATA ISSUES AND BUG CLASSIFICATION; FAULT LOCALIZATION 1 **JSEET** (20:40 – 21:40) → INSTITUTIONAL STRATEGIES TO SE EDUCATION I SPANISH INDUSTRY CASE STUDIES (LIVE SCHEDULE ONLY)
21:00 – 22:00	09:00 – 10:00	

May 27th overview

Thursday, May 27th

TIME CEST LIVE	TIME CEST MIRROR			
10:00 – 11:00	22:00 – 23:00	**Blended sessions** (10:00 – 11:00) SOCIAL EQUALITY AND FAIRNESS 2 → DEEP NEURAL NETWORKS: SUPPORTING SE TASKS 2 → DEFECT PREDICTION: AUTOMATION 2 → VULNERABILITIES IN ANDROID 2 →	**JSEET** (10:00 – 11:00) STUDENT ASSESSMENT I →	**Technical Briefing** (10:00 – 11:15) DECODING GROUNDED THEORY FOR SOFTWARE ENGINEERING →
11:00 – 12:00	23:00 – 00:00	**Panel** (11:00 – 11:45) ARE ACADEMICS WORKING ON THE RIGHT PROBLEMS?* → * MIRROR EVENT OF PANEL MAY 25TH 20:55 – 21:40 (SCHEDULE: 11:00 – 11:45) DIVERSITY & INCLUSION PANEL (MIRROR SCHEDULE ONLY: 23:00 – 23:45) →	**Networking** (11:00 – 11:45) TAKE A COFFEE WITH THE PROGRAM CO-CHAIRS OF ICSE 2021 → (LIVE SCHEDULE ONLY)	
12:00 – 13:00	00:00 – 01:00	**Blended sessions** (11:50 – 13:10) PROGRAMMING: CODE ANALYSIS ALGORITHMS → Q&A IN ONLINE PLATFORMS: STACK OVERFLOW 2 → DEFECT PREDICTION: BUG CHARACTERIZATION & ANALYSIS → MUTATION TESTING: GENERAL ISSUES →	**JSEET** (11:50 – 12:50) STUDENT ASSESSMENT II →	
13:00 – 14:00	01:00 – 02:00	**Break 25'** (13:10 – 13:35) **ICSE 2011 Most Influential Paper Award** (13:35 – 13:45) AWARDS CEREMONY → **Award Lecture** (13:45 – 14:30) LIONEL BRIAND, ANDREA ARCURI →		
14:00 – 15:00	02:00 – 03:00	**Meet with** (14:30 – 15:00) A. ARCURI, L. BRIAND →	**Networking** (14:30 – 15:00) COFFEE CHAT → MENTORING CIRCLE (LIVE SCHEDULE ONLY) → EUROPE NEEDS STRONG SOFTWARE RESEARCH (LIVE SCHEDULE ONLY) → OPPORTUNITIES AT INVENIA LABS (LIVE SCHEDULE ONLY) → SE RESEARCH @ HUAWEI (MIRROR SCHEDULE ONLY) →	**Demos** (14:30 – 15:00) EVOLUTION 2 →
15:00 – 16:00	03:00 – 04:00	**Blended sessions** (15:05– 16:05) MONITORING CLOUD-BASED SERVICES → API: DEVELOPMENT → PROGRAM REPAIR: AUTOMATED PATCHING → TESTING: FLAKY TESTS →	**JSEET** (15:05 – 16:05) NOVEL APPROACHES TO SE EDUCATION I →	**ACM Students Research Competition** (15:05 – 16:05) SRC: FINAL ROUND - PRESENTATIONS 1 → (LIVE SCHEDULE ONLY)
16:00 – 17:00	04:00 – 05:00	**Social** (16:05 – 16:25) VIRTUAL TRIP TO MADRID →		
17:00 – 18:00	05:00 – 06:00	**Blended sessions** (16:30 – 17:30) DEEP NEURAL NETWORKS: DATA SELECTION → SECURITY VULNERABILITIES: FROM 3RD PARTIES' CODE → MUTATION TESTING: MUTANT SELECTION → OPEN SOURCE: DEVELOPERS' SKILLS →	**JSEET** (16:30 – 17:40) JSEET KEYNOTE AND JSEET BEST PAPER AWARD →	**ACM Students Research Competition** (16:30 – 17:30) SRC: FINAL ROUND - PRESENTATIONS 2 → (LIVE SCHEDULE ONLY)
		Break 20' (17:30 – 17:50) **Other ICSE Awards** (17:50 – 18:00) AWARDS CEREMONY →		
18:00 – 19:00	06:00 – 07:00	**Keynote** (18:00 – 18:45 JEANNETTE WING →		
19:00 – 20:00	07:00 – 08:00	**Meet with** (18:45 – 19:15) JEANNETTE WING →	**Networking** (18:45 – 19:15) COFFEE CHAT → MENTORING CIRCLE → LGBTIQ+ GROUP MEETING (LIVE SCHEDULE ONLY) → MEET FACEBOOK RECRUITING & RESEARCH (LIVE SCHEDULE ONLY) →	**Demos** (18:45 – 19:15) TESTING 1 →
20:00 – 21:00	08:00 – 09:00	**Blended sessions** (19:20– 20:15) TESTING: GENERAL ISSUES → CONTINUOUS INTEGRATION, FEATURE MODELS AND PROGRAM TRANSFORMATION → SECURITY VULNERABILITIES: GENERAL ISSUES 1 → **Networking** (20:15 – 20:45) COMMUNITY SPEED NETWORKING (LIVE SCHEDULE ONLY) → YOGA AND BREATHWORKS (LIVE SCHEDULE ONLY) →	**Demos** (20:15 – 20:45) EVOLUTION 3 →	**Technical Briefing** (19:20 – 21:10) BAYESIAN DATA ANALYSIS FOR SOFTWARE ENGINEERING →
21:00 – 22:00	09:00 – 10:00	**Blended sessions** (20:50– 21:50) SECURITY VULNERABILITIES: DIFFERENT DOMAINS → PROGRAM REPAIR: GENERAL ISSUES → FAULT LOCALIZATION 2 → SECURITY VULNERABILITIES: GENERAL ISSUES 2 →	**JSEET** (20:50 – 21:50) NOVEL APPROACHES TO SE EDUCATION II→	

May 28th overview

Friday, May 28th

TIME CEST LIVE	TIME CEST MIRROR			
10:00 – 11:00	22:00 – 23:00	**Blended sessions** (10:00 – 10:55) OPEN SOURCE: GENERAL ISSUES → AGILE METHODS → PRIVACY IN APPS: CASES FROM COVID-19 → IMAGE PROCESSING →		**JSEET** (10:00 – 11:00) INSTITUTIONAL STRATEGIES TO SE EDUCATION II →
11:00 – 12:00	23:00 – 00:00	**Networking** (10:55 – 11:25) TAKE A COFFEE WITH THE OPEN SCIENCE CHAIR OF ICSE 2021 (LIVE SCHEDULE ONLY) → MENTORING CIRCLE (LIVE SCHEDULE ONLY) → SE RESEARCH @ HUAWEI (LIVE SCHEDULE ONLY) → MEET FACEBOOK RECRUITING & RESEARCH (MIRROR SCHEDULE ONLY) →	**Demos** (10:55 – 11:25) TESTING 2 →	**Technical Briefing** (11:10 – 13:00) ADVANCES IN CODE SUMMARIZATION →
12:00 – 13:00	00:00 – 01:00	**Blended sessions** (11:30 – 12:30) API: EVOLUTION AND MAINTENANCE 2 → TESTING: AUTOMATION → TESTING: 3RD PARTY SOFTWARE → FAULT LOCALIZATION 3 → **Networking** (12:30 – 13:00) MEET YOUR PEERS → ICSE IS RUNNING →		
13:00 – 14:00	01:00 – 02:00	**Break 35'** (13:00 – 13:35) **IEEE TCSE Harlan Mills Award** (13:35 – 13:45) AWARDS CEREMONY → **Award Lecture** (13:45 – 14:30) DIETER ROMBACH →		
14:00 – 15:00	02:00 – 03:00	**Meet with** (14:30 – 15:00) DIETER ROMBACH →	**Networking** (14:30 – 15:00) COFFEE CHAT (LIVE SCHEDULE ONLY) → MENTORING CIRCLE (LIVE SCHEDULE ONLY) → OPPORTUNITIES AT INVENIA LABS (LIVE SCHEDULE ONLY) →	
15:00 – 16:00	03:00 – 04:00	**Blended sessions** (15:05 – 16:05) ANALYZING SYSTEM PROPERTIES: CORRECTNESS, DETERMINISM, REALIZABILITY → PERFORMANCE MODELING OF HIGHLY CONFIGURABLE SOFTWARE SYSTEMS → CODE REVIEW: READABILITY AND REFACTORING → CONFIGURATION OF SOFTWARE SYSTEMS: OPTIMIZATION →	**JSEET** (15:05 – 16:25) . TEACHING SOFTWARE QUALITY II →	**Technical Briefing** (15:05– 17:20) THE SOFTWARE CHALLENGES OF BUILDING SMARTCHATBOTS →
16:00 – 17:00	04:00 – 05:00	**Networking** (16:05 – 16:35) YOGA AND BREATHWORKS (LIVE SCHEDULE ONLY) → TAKE A COFFEE WITH THE PROGRAM CO-CHAIRS OF ICSE 2022 → (LIVE SCHEDULE ONLY) ICPC (LIVE SCHEDULE ONLY) →		
17:00 – 18:00	05:00 – 06:00	**Blended sessions** (16:40 – 18:00) SEIP TALKS → DEFECT PREDICTION: MODELING AND PERFORMANCE → DEVELOPERS: WELL-BEING AND PRODUCTIVITY → SOURCE CODE HISTORIES AND DOCUMENTATION →		
18:00 – 19:00	06:00 – 07:00	**Break 20'** (18:00 – 18:20) **Other IEEE TCSE Awards** (18:20 – 18:30) AWARDS CEREMONY → **Town Hall** (18:30 – 19:30) TOWN HALL →		
19:00 – 20:00	07:00 – 08:00	**Blended sessions** (19:30 – 20:30) GAMES → PATTERNS AND SMELLS → PROGRAMMING: LOW LEVEL → OBTAINING INFORMATION FROM ISSUES AND COMMITS →	**JSEET** (19:30 – 20:30) TEAM PRACTICES →	
20:00 – 21:00	08:00 – 09:00	**Social** (20:30 – 21:00) FLAMENCO LESSON & PARTY 2 (LIVE SCHEDULE ONLY) →		
21:00 – 22:00	09:00 – 10:00	**ACM SRC and SCORE** (21:05 – 21:20) SRC AND SCORE AWARDS → **Closing Ceremony** (21:20 – 21:45) CLOSING CEREMONY →		

Workshops

May 24th Monday	May 29th Saturday	May 30th Sunday	May 31st Monday	June 1st Tuesday	June 2nd Wednesday	June 3rd Thursday	June 4th Friday
SEENG(*) WEBPAGE →	SoHeal WEBPAGE → JOIN SESSION →	GI WEBPAGE → JOIN SESSION →	SBST(*) WEBPAGE →	APR WEBPAGE → JOIN SESSION →	MET WEBPAGE → JOIN SESSION →	SEH WEBPAGE → JOIN SESSION →	BotSE WEBPAGE → JOIN SESSION →
	Cloud Intelligence WEBPAGE → JOIN SESSION →	WAIN WEBPAGE → JOIN SESSION →		DeepTest WEBPAGE → JOIN SESSION →	RoSE(*) WEBPAGE →	SERP4IoT(*) WEBPAGE →	SER&IP(*) WEBPAGE →
			WETSEB WEBPAGE → JOIN SESSION →	BoKSS(*) WEBPAGE →		SESoS/ WDES WEBPAGE → JOIN SESSION →	SEthics WEBPAGE → JOIN SESSION →
			SEmotion WEBPAGE → JOIN SESSION →	Q-SE WEBPAGE → JOIN SESSION →		EnCyCriS WEBPAGE → JOIN SESSION →	

(*) the following Workshops are not held on Clowdr, but in alternate platforms. To get access please reach the Workshop organizer.

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Welcome letter

On behalf of the ICSE 2021 Organizing Committee, I'm delighted to welcome you to the 43rd ACM/IEEE International Conference on Software Engineering. For the first time in its 46-year history, ICSE is to visit Spain, although, unfortunately, it has to be virtually. ICSE 2021 was originally scheduled as a physical event to take place in Madrid, Spain. The persistence of the coronavirus pandemic has, however, ruled out the possibility of holding a safe physical conference.

Despite the enormous challenges that everybody is facing during these hard pandemic times, ICSE, we are pleased to say, continues to be the premier software engineering conference with an unchanged number of submissions and an increased number of attendees.

Workshops and Co-located Events: ICSE's main conference is preceded by five days (May 17th to 21st) of nine co-located conferences and symposia (AST, CHASE, FormaliSE, ICPC, ICSSP/ICGSE, MOBILESoft, MSR, SEAMS and TechDebt) and followed by 21 workshops dealing with specific aspects of software engineering spread over a seven-day period (May 29th to June 4th).

Mentoring Events: ICSE has a tradition of mentoring its next generation of researchers through various small-group meetings between junior and established researchers. The two traditional mentoring events will each be held on two half-days prior to the main conference. The Doctoral Symposium (which provides students with constructive feedback on their PhD research) will run on May 21st and 24th, while the New Faculty Symposium (which provides guidance to new faculty members on different facets of an academic career) will be held on May 19th and 20th.

Main Conference: This year ICSE will include a four-day main conference taking place from Tuesday, May 25th, to Friday, May 28th. This year's main conference is one of the largest ever, with over 325 paper presentations. Paper presentations within the Technical, Software Engineering in Practice (SEIP), Software Engineering in Society (SEIS), New Ideas and Emerging Results (NIER) and Journal-First Tracks have been combined into blended sessions that are organized by topic rather than by track. The track on Software Engineering Education and Training (SEET) has its own topics and dedicated sessions. Technical briefings, Demonstrations, Posters and the ACM Student Research Competition will be run in parallel to the technical or networking sessions.

The technical sessions will be interlaced with social sessions to achieve, despite virtuality, ICSE's traditional role of building and consolidating our community. We will have more than 30 social/networking events (including hangouts with keynote speakers and awardees, technical and non-technical speed dating-like sessions, yoga, coffee with members of the OC, and several mentoring and minority groups support sessions).

The Technical Track received 615 paper submissions written by about 2,000 authors. Finally, 138 papers were accepted, with an acceptance rate of 22.4%. The Technical Track followed a double-blind review process in which authors were required to anonymize their submissions, and authors of accepted papers were disclosed only after all the decisions were finalized. Authors of rejected papers remained anonymous. Each paper was reviewed by at least three PC members, and the online discussion and decision was overseen by a fourth PC member who served as the moderator. Authors could read and submit a response to the reviews during the author response period. The SEIP track received 121 submissions, 41 of which were accepted. The SEIS track received 33 submissions, 11 of which were finally accepted. NIER received 81 submissions, of which 22 were accepted. SEET received 93 submissions, of which 31 were accepted.

Keynotes: I am especially pleased to welcome six distinguished keynote speakers and encourage you to attend their exciting talks, all of which (except one) will be plenary events.

- On Tuesday 14:00 CEST, Dario Gil, Senior Vice President and Director of IBM Research, will introduce us to quantum computation and IBM Quantum Experience (a platform that gives users access to a set of IBM's prototype quantum processors via the cloud). His talk also discusses Qiskit challenges like error correction and verification. Qiskit provides tools for creating and manipulating quantum programs.
- On Tuesday 18:00 CEST, Prem Devanbu, Professor at UC Davis, will give an overview of naturalness and bimodality, as two important properties of software code, highlighting creative and interesting applications of naturalness, and the promise of bimodality.
- On Wednesday 10:00 CEST, Michael R. Lyu, Choh-Ming Li Professor at the Computer Science and Engineering Department, Chinese University of Hong Kong, will discuss the critical challenges commonly seen in industrial cloud systems and propose the development of a reliability-driven AIOps (Artificial Intelligence for IT Operations) framework to achieve resilient cloud systems.
- On Wednesday 17:30 CEST, Elaine Weyuker, University Distinguished Professor at the College of Engineering and Computer Science, University of Central Florida, will discuss her ideas on good software engineering research, and proper software engineering education based on her professional experience in different roles and positions in industry and academia.
- On Thursday 18:00 CEST, Jeannette Wing, Avanessians Director of the Data Science Institute and Professor of Computer Science at Columbia University, will invite us to ensure the responsible use of data to benefit society. In particular, she will present research activities aimed to promote Data for Good (the use of data to address societal challenges and bring in humanistic perspectives).
- On Thursday 16:40 CEST, David Garlan, Professor of Computer Science and Associate Dean for Master's Programs at the School of Computer Science at Carnegie Mellon University, will offer a talk in the context to the JSEET track. He will reflect on the role of Software Architecture in Software Engineering Education.

Awards: Some plenary sessions have been scheduled to honor the recipients of the diverse awards. In particular, the recipients of the three main ICSE awards, will offer inspiring talks for the audience:

- ICSE 2011 Most Influential Paper award has gone to Andrea Arcuri and Lionel Briand for their paper entitled *A Practical Guide for Using Statistical Tests to Assess Randomized Algorithms in Software Engineering*, addressing the key challenges of using statistical tests in software engineering. We will enjoy their talk on Thursday 13:45 CEST.
- ACM SIGSOFT Outstanding Research award has gone to Prem Devanbu for profoundly changing the way researchers think about software by exploring connections between source code and natural language. Prem was invited as a keynote speaker months before he was honored with this award. Therefore, we have designed a special style to combine both his two talks into an extended keynote address on Tuesday.
- IEEE TCSE Harlan D. Mills award has gone to Dieter Rombach in recognition of his outstanding contributions to and leadership of research, teaching, and technology transfer in the area of empirical software engineering. He will delight us with his talk on Friday 13:45 CEST.

Cultural Events: Although the physical event, which would have given you the chance to enjoy Spanish food, music, dance and more, will have to wait for better times, we have made a big effort to keep up some of our traditions, even though the virtual context is not always helpful in this respect. We have organized the usual ICSE run, albeit adapted to the virtual environment. We will be offering tidbits of Spanish culture. On Tuesday May 25th at 16:15 CEST, you will have the opportunity to enjoy a guitar micro concert (20 minutes) recorded especially for ICSE 2021 from the monumental ancient city of Caceres. On Thursday May 27th at 16:05 CEST, a couple of colleagues from the ICSE Organizing Committee will broadcast a live 20-minute walk around one of Madrid's touristic landmarks: Plaza de Oriente. Finally, we have the jewel in the crown: an online Flamenco class and party that will immerse you in the cultural experience of flamenco. This event will be organized twice to accommodate all time zones: Wednesday May 26th (12:20 CEST) and Friday 28th (20:30 CEST). The events will not be the same, and you are welcome to attend both if you can!

We have introduced several new initiatives this year regarding organization, tracks, and virtual environment.

In terms of the organization, the innovations apply to:

1. A One Role Policy, deployed at ICSE 2021 to reinforce diversity. According to this policy, nobody can participate in more than one committee, including the Organizing Committee. We would like to thank all the chairs for the big effort that they have made to roll out this policy. The results are promising, and committees (521 people) are more diverse and balanced than in previous years, including people from all continents (48% Europe; 30% North America; 11% Asia; 4.5% Oceania; 6% South America; 0.6% Africa) and a higher percentage of women (37% vs 64%).
2. This is the first ICSE to have Equity, Diversity, and Inclusion (EDI) chairs. EDI chairs oversee promoting equity, diversity, and inclusion at ICSE and ensuring that ICSE is perceived by attendees as being inclusive
3. This is also the first ICSE to reckon with a Sustainability chair. The Sustainability chair is in charge of encouraging ICSE to promote all aspects of people- and planet-related sustainability.
4. Finally, ICSE 2021 has embraced open science as a strategic goal. Open science aims to promote the transparency and availability of research outputs at ICSE, encouraging better reproducibility and replicability of studies. This year we required all authors of the main conference to upload their paper preprints. Such availability is critical in a virtual conference. We are proud that all research papers of the main conference are openly available via the conference web site. We are hugely grateful to all the authors, who self-archived, and then shared their links with us.

Some tracks have implemented innovations, all of which are detailed in their respective welcome letters. We highlight some of these key innovations below:

1. The Technical Track set up the new role of area chairs to assist the program co-chairs to handle tasks such as ensuring consistency for papers within an area and across areas. Also, this year the Technical Track has a flat structure, and the program board is not separate from the Program Committee.
2. The Journal-First Track selected papers from submissions based on a few criteria, including evident novelty with respect to already published papers, match with the established ICSE 2021 program, prospective interest

to a large portion of the ICSE audience, and whether the authors were already presenting as part of one of the other tracks at the conference.

3. The Software Engineering Education and Training (SEET) Track has joined forces with the Conference on Software Engineering Education and Training (CSEE&T) to bring you the Joint Track on Software Engineering Education and Training (JSEET). This unification offers both communities a seamless, expanded, and richer experience.

Regarding the virtual environment:

1. We will again use the Clowdr platform, with which most of you are already familiar from ICSE 2020. Clowdr was hastily developed by our ICSE community as a solution for the ICSE 2020 virtualization issue in response to the COVID-19 pandemic. The Clowdr platform has grown and improved enormously. It is now a UK community interest company and, as such, is required to reinvest almost all of its revenue into improving the platform for the good of the academic community whence it originated. By opting for the Clowdr platform, not only are we supporting the future development of Clowdr but we are also promoting an affordable solution for all academic conference organizers in these difficult times.

2. The ICSE 2021 program has been divided into a 12-hour uniform daily schedule rather than using time zones. This should guarantee a simpler, uniform structure for ICSE 2021 that is easier for conference attendees to understand and transmit the feeling of a real conference. We chose the daily 12-hour slot that maximizes the synchronous participation of the ICSE community in order to promote high interactivity. We also provide mirroring to give attendees unable to attend the live program the chance to replay and watch the entire program in the following daily 12-hour slot. In addition, some networking activities will be played live also during the mirrored program.

3. We tried to improve networking activities and imitate the face-to-face experience. Although they are obviously no substitute for a physical conference, virtual environments can enable virtual networking with people all over the globe who would otherwise be unable to attend in person. Therefore, virtuality is an opportunity to increase access to the conference for many who, even under normal circumstances, may not have been able to travel to a physical conference.

4. We have reinforced out efforts to provide support for ICSE attendees and presenters to help them adapt to the virtual environment, offering tips to promote smooth attendance.

ICSE 2021 would not happen without the tremendous effort and countless hours of unpaid work put in by members of our community. Our heartfelt gratitude goes to everyone involved, and especially to our extraordinary Organizing Committee —a team of 71 volunteers drawn from Spain and around the world— that planned a physical conference and organized a virtual event: no easy feat.

All Organizing Committee members have done a splendid job, meeting deadlines and performing their roles with prowess. We have all worked a lot harder than we ever expected. You have no idea what it is to arrange such a complex conference as ICSE, and the complications you face when the plans change half-way down the road as they did this year. The list of names is far too long to pen here, but they are omnipresent on the ICSE 2021 website.

Welcome letter

Finally, I would also like to thank all the authors and other contributors for participating in ICSE despite the difficult times that we are going through. You are the reason why ICSE is the premier conference in software engineering.

We are excited about the great program that we have prepared! I hope that you will find lots of interesting sessions and speakers in the technical program and plenty of opportunities for discussions and networking in the social program.

Before I finish, I would like to spare a thought for any members of the ICSE community that are suffering distress due to COVID-19. We wish you and your loved ones all the best in these difficult times.

Thank you,

Natalia Juristo, General Chair, ICSE 2021

Darío Gil

Tuesday May 25th
14:00 CEST

What's next in software. Where will software go in the next few years? How will it be written and consumed? How is software enabling new paradigms of computation? These are some of the questions we will explore as we discuss how we are pushing the frontiers of software.

We have witnessed in recent years the power of AI applied to human language. Project Debater is the most recent example of how far AI has come to learn and reason in human language. Powerful AI models are now emerging that enable AI to create in new domains like software engineering. Just as words are the language of humans, code is the language of machines, and we are building AI that helps us master code. Imagine a future where computers program computers; and by learning, reasoning, and generating new code, AI can streamline and automate time-consuming and tedious manual IT processes, freeing up software engineers time to unleash their creativity. We will discuss the underlying techniques enabling this future. We will see the transformative impact of AI for code, from modernizing legacy applications to intelligently managing them. Furthermore, we will see how we can ensure trust, security, and compliance in the use of AI models.

Finally, a new paradigm of computation combining physics and information—quantum computing—is emerging capable of solving problems intractable to conventional computers. The utility of a quantum computer is determined by its ability to run computationally hard quantum circuits leading to advantages in the solution of science and business problems. Software development is key to realizing this utility and extracting the benefits of quantum computing. We will discuss how software engineering is leading to a higher capacity of running circuits by speeding up the execution rate, and how it allows a wider variety of circuits to be run more efficiently to enable more applications.

DARÍO GIL - SHORT BIOGRAPHY

Dr. Darío Gil is Senior Vice President and Director of IBM Research.

As a technology and business leader, Dr. Gil is responsible for IBM Research, one of the world's largest and most influential corporate research labs, with over 3,000 researchers. He is the 12th Director in its 76-year history. Dr. Gil leads the technology roadmap and the technical community of IBM, directing innovation strategies in areas including hybrid cloud, AI, quantum computing, and exploratory science. He is also responsible for IBM's intellectual property strategy and business.

Dr. Gil is a globally recognized leader of the quantum computing industry. Under his leadership, IBM was the first company in the world to build programmable quantum computers and make them universally available through the cloud.

An advocate of collaborative research models, Dr. Gil co-chairs the MIT-IBM Watson AI Lab, which advances fundamental AI research to the broad benefit of industry and society. He also co-chairs the COVID-19 High-Performance Computing Consortium, which provides access to the world's most powerful high-performance computing resources in support of COVID-19 research.

Dr. Gil is a member of the National Science Board, the governing body of the National Science Foundation (NSF), a member of the Board of Governors of the New York Academy of Sciences, and a trustee of the New York Hall of Science.

Dr. Gil received his Ph.D. in Electrical Engineering and Computer Science from MIT.

Prem Devanbu

Tuesday May 25th
18:00 CEST

Naturalness and Bimodality of Code: A Research Overview. While natural languages are rich in vocabulary and grammatical flexibility, most human are mundane and repetitive. This repetitiveness in natural language has led to great advances in statistical NLP methods.

At UC Davis, we discovered (a decade ago) that, despite the considerable power and flexibility of programming languages, large software corpora are actually even more repetitive than NL Corpora. We went on to show that this “naturalness” of code could be captured in statistical models, and exploited within software tools. This line of work enjoyed a tremendous boost from the high-capacity and flexibility of deep learning models. Numerous other creative and interesting applications of naturalness have ensued, from colleagues around the world. More recently, we have focused on another property of software: it is bimodal. Software is written not only to be run on machines, but also read by humans; this makes it amenable to both formal analysis, and statistical prediction. Bimodality allows new ways of training machine learning models, new ways of designing analysis algorithms, and new ways to understand the practice of programming. In this talk, I will present an overview of "Naturalness" studies, and the promise of bimodality.

PREM DEVANBU - SHORT BIOGRAPHY

Prem Devanbu received his B.Tech from IIT Madras, and a Ph.D from Rutgers University under Alex Borgida. After working in Industrial software development at Bell Laboratories and offshots in New Jersey, he joined UC Davis where he conducts teaching & research software engineering. He has won several awards for his work, including multiple best paper awards, distinguished paper awards, most influential paper awards, and test-of-time awards. Three of his papers were invited to appear in CACM Research Highlights. He served as PC Chair of ESEC/FSE 2006 and ICSE 2010, and also as GC of MSR 2014 and ESEC/FSE 2020. He has served on the Editorial boards of ACM TOSEM, IEEE ToSE, the JSME, and the EMSE Journal; he serves currently on the CACM Editorial Board. He is an ACM Fellow. He even has his own web page.

Michael Lyu

Wednesday May 26th
10:00 CEST

Reliability-Driven AIOps for Cloud Resilience. Cloud computing platforms have recently become the main host of many IT enterprises to deploy their applications and services, such as search engine, instant messaging apps, and online shopping. As cloud systems continue to grow in terms of complexity and volume, cloud failures become inevitable, which further lead to service interruptions and performance degradation. Whether cloud failures can be properly managed will greatly affect company revenue and customer trust. Consequently, resilient cloud operations are of paramount importance to cloud vendors. However, as cloud systems are actively undergoing continuous feature upgrade and system evolution, the statistical properties of system monitoring data may change from time to time. Furthermore, there is currently a lack of means to incorporating human expert knowledge into the training of cloud data-analytics models. When diagnosing failures for large-scale systems, such knowledge is essential.

In this talk, we identify several critical challenges commonly seen in industrial cloud systems, and provide a general roadmap from fault prevention and fault removal techniques toward resilient cloud operations. We propose to develop a reliability-driven AIOps (Artificial Intelligence for IT Operations) framework to achieving resilient cloud systems. Our goal is to improve the reliability of cloud systems and services comprehensively with AI-based data analytics, where data are collected from multiple sources of heterogeneous information such as logs, traces, and KPIs, and properly labeled with cloud domain expert's knowledge. Particularly, the framework consists of an end-to-end pipeline of software reliability engineering, including anomaly detection, failure diagnosis, and fault localization. Anomalies are events or observations that deviate significantly from a system's normal behaviors. When anomalies become severe and hinder the system from fulfilling a required function, failures occur, which often manifest themselves with human-perceivable symptoms. Failure diagnosis attempts to find the most significant problems directly induced by the failures. To achieve this objective, we explore data-driven approaches to pursue an efficient failure diagnosis from multiple perspectives of cloud systems. We investigate on what failures are caused by the anomalies underneath, which is generally indicated by a sudden increase or drop of KPIs. For example, the KPI "packet number" monitoring the cloud network may abruptly decrease because of anomalies happening in some network services. This may point to a serious failure in the network. To this end, we design an

incident aggregation procedure based on heterogeneous information fusion from incidents, topology, and fine-grained system monitoring data to identify the cascaded failures in a cloud system. Furthermore, we probe into human experts' activities to enhance the failure diagnosis procedures. Maintainers generally assign different importance of system performance to different KPIs in the cloud. To employ expert knowledge into the training of automated detection models, we introduce an adaptive failure diagnosis mechanism via human-in-the-loop, in which we systematically select informative samples for manual labeling and largely improve the performance of supervised learning algorithms. With this method, we could train a more accurate model from both historical data and human knowledge. More specifically, cloud maintainers could interact with a serving model with minimal efforts. When false alarms and misses happen, the model can adaptively learn from them with the help of the human interaction. As a result, the model could be more accurate over time by systematically accumulating the human knowledge. Finally, we explore fault localization approaches to cluster microservice in the cloud based on logs and KPIs. We employ a PC algorithm for microservice dependency construction, and formulate a probabilistic matrix factorization algorithm for root cause recommendation. Various analytical models associated with the proposed reliability-driven AIOps framework are constructed, experimentations on real cloud data are conducted, and effectiveness of our proposed software reliability engineering techniques are demonstrated.

MICHAEL LYU - SHORT BIOGRAPHY

Prof. Michael R. Lyu is currently Choh-Ming Li Professor of the Computer Science and Engineering department in The Chinese University of Hong Kong. Prof. Lyu's research interests include software engineering, software reliability, distributed systems, cloud computing, and machine learning. He has published over 600 refereed journal and conference papers in his research areas. Prof. Lyu initiated the first International Symposium on Software Reliability Engineering (ISSRE) in 1990. He was an Associate Editor of IEEE Transactions on Reliability, IEEE Transactions on Knowledge and Data Engineering, IEEE Transactions on Services Computing, and Journal of Information Science and Engineering. He is currently on the editorial board of IEEE Access, Wiley Software Testing, Verification and Reliability Journal (STVR) , and ACM Transactions on Software Engineering Methodology (TOSEM). Prof. Lyu was elected to IEEE Fellow, AAAS Fellow, ACM Fellow, and named IEEE Reliability Society Engineer of the Year. He was granted with China Computer Federation (CCF) Overseas Outstanding Contributions Award in 2018, and the 13th Guanghua Engineering Science and Technology Award in 2020. He was also named in The AI 2000 Most Influential Scholars Annual List with three appearances in 2020.

Prof. Lyu received his B.S. in Electrical Engineering from National Taiwan University, his M.S. in Computer Science from University of California, Santa Barbara, and his Ph.D. in Computer Science from University of California, Los Angeles.

Elaine Weyuker

Wednesday May 26th
17:30 CEST

The View From 40 Years in the Research Trenches - From Academia to Industry and Back Again I began my career in computing as a newly graduated math major, My first post-college job was as a programmer although I'd never programmed or even seen a computer. I spent the first 3 weeks in the trenches reading a manual and learning to program and then I was unleashed on the world. After 9 months programming, I started graduate school in an Electrical Engineering Master's program, focusing on Computer Science, having never taken either an Engineering or a Computer Science course. What was I thinking?

Armed with my Master's degree, the next rung on my ladder was another industrial position, this time as a System Engineer. That lasted a year before I accepted a position in a teaching college as the sole professor of Computer Science within a general Engineering program. During my 6 years there I taught everything from Switching Theory to Mathematical Logic, beginning programming, Compilers, Operating Systems, Operations Research, and perhaps a dozen other courses. At this point it was time to go back to graduate school, get a PhD in Computer Science, and climb up a few more rungs at a research university. I spent the next 16 years as a professor at NYU doing research in software testing, reliability, metrics and other areas of Software Engineering, although my dissertation and training were largely theoretical. While I was quite successful, publishing many papers, receiving lots of research grants and some awards, and loved teaching, I also did a fair amount of industrial consulting since I was always interested in how my ideas might impact the real world. While I had had a number of unsolicited offers to move to industry, I always thought of myself first and foremost as an academic until someone at Bell Labs convinced me to try it during a sabbatical leave. Although I got much closer to industrial practice there, I still was viewed as an outsider who gave advice, rather than an integral part of the team. After returning to NYU, I was eventually convinced to take an unpaid leave and try working for the Labs full-time as a regular member of the Technical Staff in Research. I wound up spending the next 19 years at AT&T Bell Labs and then AT&T Labs - Research as a full-time researcher who generally partnered with development projects. In 2012, AT&T was shutting down Research and I left and resumed a non-conventional academic career.

In this talk I will discuss how my different types of positions: working in industrial computing, at a teaching college, at a research university and in

industrial research have informed my ideas about good Software Engineering research, and proper Software Engineering education.

ELAINE WEYUKER - SHORT BIOGRAPHY

Elaine Weyuker is a (part-time) University Distinguished Professor, College of Engineering and Computer Science, University of Central Florida. Until the end of 2020 she was also a Part Time Visiting Professor at Mälardalen University in Västerås, Sweden. At both universities she mentors junior faculty, PhD students and post-docs, collaborates faculty, and interacts with local industrial partners. She continues to live in the US. Previously, Elaine was a Fellow and Distinguished Member of the Technical Staff at AT&T Labs and Bell Labs, a Professor of Computer Science at the Courant Institute of Mathematical Sciences of New York University, a Lecturer at the City University of New York, a Systems Engineer at IBM, and a programmer at Texaco, as well as having served as a consultant for several large international companies.

Her research expertise includes techniques and tools to improve the quality of software systems through systematic validation activities, including the development of testing, assessment and software fault prediction models. Prior to that, Elaine did research in Theory of Computation and is the co-author of a book "Computability, Complexity, and Languages". She has authored many technical papers in these fields.

Professor Weyuker is a member of the US National Academy of Engineering, an IEEE Fellow, and an ACM Fellow and has received numerous awards including IEEE's Harlan Mills Award for outstanding software engineering research, and the ACM/SIGSOFT Outstanding Research Award.

She was the recipient of the 2011 US President's Volunteer Service Award, the 2010 ACM President's Award, the ACM SIGSOFT Retrospective Impact Paper Award in 2009, the 2008 Anita Borg Institute Technical Leadership Award, Rutgers University 50th Anniversary Outstanding Alumni Award, and the AT&T Chairman's Diversity Award as well has having been named a Woman of Achievement by the YWCA.

She was the chair of the ACM Women's Council (ACM-W) from 2004 - 2012 and continues her active participation in ACM-W. She has also been a member of the Executive Committee of the Coalition to Diversify Computing, has served on many National Academy panels, was a board member of the Computing Research Association, a member of the ACM Council, a member of the ACM/SIGSOFT Executive Board, as well as being an editor of several technical journals.

She received a BA degree in Mathematics from Harpur College, State University of New York at Binghamton, a Masters of Science in Engineering from the University of Pennsylvania, and a Ph.D. degree from Rutgers University. Professor Weyuker is a firm believer in the transformational power of education and the critical (pivotal) role that public institutions play.

Jeannette Wing

Thursday May 27th
18:00 CEST

Data for Good: Ensuring the Responsible Use of Data to Benefit Society Every field has data. We use data to discover new knowledge, to interpret the world, to make decisions, and even to predict the future. The recent convergence of big data, cloud computing, and novel machine learning algorithms and statistical methods is causing an explosive interest in data science and its applicability to all fields. This convergence has already enabled the automation of some tasks that better human performance. The novel capabilities we derive from data science will drive our cars, treat disease, and keep us safe. At the same time, such capabilities risk leading to biased, inappropriate, or unintended action. The design of data science solutions requires both excellence in the fundamentals of the field and expertise to develop applications which meet human challenges without creating even greater risk.

The Data Science Institute at Columbia University promotes "Data for Good": using data to address societal challenges and bringing humanistic perspectives as—not after—new science and technology is invented. Started in 2012, the Institute is now a university-level institute representing over 350 affiliated faculty from 18 different schools and institutes across campus. Data science literally touches every corner of the university.

In this talk, she will present the mission of the Institute and highlights of our educational and research activities—all with the aim of ensuring the responsible use of data to benefit society.

JEANNETTE WING - SHORT BIOGRAPHY

Jeannette M. Wing is Avanessians Director of the Data Science Institute and Professor of Computer Science at Columbia University. From 2013 to 2017, she was a Corporate Vice President of Microsoft Research. She is Adjunct Professor of Computer Science at Carnegie Mellon Univesrity where she twice served as the Head of the Computer Science Department and had been on the faculty since 1985. From 2007-2010 she was the Assistant Director of the Computer and Information Science and Engineering Directorate at the National Science Foundation. She received her S.B., S.M., and Ph.D.

degrees in Computer Science, all from the Massachusetts Institute of Technology.

Professor Wing's general research interests are in the areas of trustworthy computing, specification and verification, concurrent and distributed systems, programming languages, and software engineering. Her current interests are in the foundations of security and privacy, with a new focus on trustworthy AI. She was or is on the editorial board of twelve journals, including the Journal of the ACM and Communications of the ACM.

Professor Wing is known for her work on linearizability, behavioral subtyping, attack graphs, and privacy-compliance checkers. Her 2006 seminal essay, titled "Computational Thinking" is credited with helping to establish the centrality of computer science to problem-solving in fields where previously it had not been embraced.

She is currently a member of: American Academy for Arts and Sciences Council; the Board of Trustees for the Institute of Pure and Applied Mathematics; the Advisory Board for the Association for Women in Mathematics; and the Alibaba DAMO Technical Advisory Board. She has been chair and/or a member of many other academic, government, and industry advisory boards. She received the CRA Distinguished Service Award in 2011 and the ACM Distinguished Service Award in 2014. She is a Fellow of the American Academy of Arts and Sciences, American Association for the Advancement of Science, the Association for Computing Machinery (ACM), and the Institute of Electrical and Electronic Engineers (IEEE).

David Garlan

Thursday May 27th
16:40 CEST

Reflections on the Role of Software Architecture in Software Engineering Education. Ever since software architecture emerged as a recognized subfield of software engineering in the 1990s, software engineering educational programs have attempted to integrate it into their curricula. In this talk I reflect on my own experience over the past three decades in attempting to find effective ways to teach "architecture thinking" – specifically considering questions such as: What is worth teaching? Who needs to understand software architecture? How can architectural principles and techniques be best conveyed? How have the educational drivers for software architecture changed over time?

DAVID GARLAN - SHORT BIOGRAPHY

David Garlan a Professor of Computer Science and Associate Dean for Master's Programs in the School of Computer Science at Carnegie Mellon University. His research interests include software architecture, self-adaptive and autonomous systems, formal methods, and cyber-physical systems. He is considered one of the founders of the field of software architecture, and, in particular, formal representation and analysis of architectural designs. He has received a Stevens Award Citation for "fundamental contributions to the development and understanding of software architecture as a discipline in software engineering," an Outstanding Research award from ACM SIGSOFT for "significant and lasting software engineering research contributions through the development and promotion of software architecture," an Allen Newell Award for Research Excellence, an IEEE TCSE Distinguished Education Award, and a Nancy Mead Award for Excellence in Software Engineering Education. He is a Fellow of the IEEE and ACM.

NLP for Requirements Engineering: Tasks, Techniques, Tools, and Technologies

Alessio Ferrari CNR-ISTI, **Liping Zhao** Univ. of Manchester, **Waad Alhoshan** IMSIU

Tuesday, May 25, 15:00 CEST (75 minutes)

Requirements engineering (RE) is one of the most natural language-intensive fields within the software engineering area. Therefore, several works have been developed across the years to automate the analysis of natural language artifacts that are relevant for RE, including requirements documents, but also app reviews, privacy policies, and social media content related to software products. Furthermore, the recent diffusion of game-changing natural language processing (NLP) techniques and platforms has also boosted the interest of RE researchers. However, a reference framework to provide a holistic understanding of the field of NLP for RE is currently missing.

Based on the results of a recent systematic mapping study, and stemming from a previous ICSE tutorial by one of the authors, this technical briefing gives an overview of NLP for RE tasks, available techniques, supporting tools and NLP technologies. Part of the talk will present the concept of transfer learning, the BERT language model, and how can this be used in RE. The technical briefing is oriented to both researchers and practitioners, and will gently guide the audience towards a clearer view of how NLP can empower RE, providing pointers to representative works and specialised tools.

Alessio Ferrari is research scientist at CNR-ISTI (Consiglio Nazionale delle Ricerche - Istituto di Scienza e Tecnologia dell'Informazione was "A. Faedo", Pisa, Italy - www.isti.cnr.it), where he works since 2011. He received his Ph.D. in Computer Engineering from the University of Florence, Italy, in 2011. His current research interests are applications of NLP techniques to RE, requirements elicitation, and RE teaching. In particular, his main focus is natural language ambiguity detection and mistakes identification in requirements elicitation interviews and requirements documents. Ferrari participated in several European Projects, including Learn PAd, ASTRail, and DESIRA. He is author of more than 70 papers in relevant conferences (RE, ICSE) and journals (REJ, EMSE, IEEE Software). He served in the PC of ICSE, IEEE RE, REFSQ, he has been co-organiser of two editions of the NLP4RE workshop, and local organiser of REFSQ 2020.

Liping Zhao is Associate Professor in the Department of Computer Science, the University of Manchester. Her current research focuses on using NLP and machine learning to support RE. From 2004 to 2014 she had been in collaboration with IBM on Pattern Language for the Design and Development E-business Applications and received three IBM Faculty Awards (2004, 2005, and 2008) for her contributions. From 2007 to 2012, she co-founded and led a multidisciplinary academic network in the UK on service science (SSMEnetUK), funded by the UK Research Council, BT, HP, and IBM. She is an Associate Editor for Requirements Engineering (Springer) and Expert Systems (Wiley). She has served on numerous conferences and workshops, and has been co-organiser of IEEE International Workshops on Requirements Patterns, co-located with RE Conference (from 2012 to 2016) and International Workshop on Advances and Applications of Problem Orientation (IWAAPO), co-located with ICSE (2010).

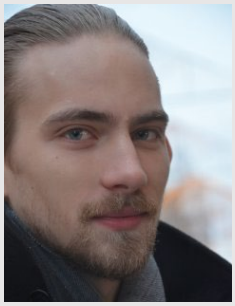
Waad Alhoshan is an Assistant Professor in the Department of Computer Science, IMSIU. She received her PhD degree in Computer Science in 2020 from the University of Manchester, where she studied corpus-based and language modeling techniques to investigate approaches for detecting semantic relationships between software requirements. During her PhD, Waad published several papers in peer-reviewed conferences such as LREC, RE and ESEM. Currently, she is cooperating on multiple research projects on designing NLP-based systems to support software in Arabic and English languages. One of these projects is a collaboration project between IMSIU and the Saudi Authority for Intellectual Property (SAIP) to design AI-driven systems for processing legal documents.

Hands-On Session on the Development of Trustworthy AI software

Ville Vakkuri, Kai-Kristian Kemell, Pekka Abrahamsson, University of Jyväskylä

Tuesday, May 25, 19:35 CEST (135 minutes)

Following various real-world incidents involving both purely digital and cyber-physical Artificial Intelligence (AI) systems, AI Ethics has become a prominent topic of discussion in both research and practice, accompanied by various calls for trustworthy AI systems. AI ethics issues such as data privacy are currently highly topical. However, implementing AI ethics in practice remains a challenge for organizations. In this Hands-On technical briefing, we demonstrate how to implement AI ethics. We showcase a method developed for this purpose, ECCOLA, which is based on academic research. ECCOLA is intended to make AI ethics more practical for developers in order to make it easier to incorporate into AI development to create trustworthy AI systems. Participants get to utilize the method in practice and get their own digital copy of ECCOLA to take home.



Ville Vakkuri. PhD candidate from Faculty of Information Technology at University of Jyväskylä, Finland. He holds a MSc in Theology with a Social Ethics major from University of Helsinki. Vakkuri's PhD research topic molds the AI community's view towards ethically designed systems by embedding ethics into software development with a new practical approach.

Kai-Kristian Kemell. PhD candidate from the Faculty of Information Technology at the University of Jyväskylä, Finland. He holds a MSc (Econ) in Information Systems (IS) and an M.A. in History. Kemell's research interests lie in software development methods, and particularly in the context of software startups, as well as AI ethics with a focus on development practices.

Pekka Abrahamsson. Professor of information systems and software engineering Head of IS Research Division, Director of Software Startuplab Member of the Finnish Academy of Science and Letters Faculty of Information Technology, University of Jyväskylä, Finland.

Reactive Synthesys with Spectra: A Tutorial

Shahar Maoz Tel Aviv University, **Jan Oliver Ringert** University of Leicester

Wednesday May 26th 14:30 CEST (135 minutes)

Reactive systems compute by ongoing interaction with their environment. Example systems include industrial robots and web applications. Spectra is a formal specification language specifically tailored for use in the context of reactive synthesis, an automated procedure to obtain a correct-by-construction reactive system from its temporal logic specification. Spectra comes with the Spectra Tools, a set of analyses, including a synthesizer to obtain a correct-by-construction implementation, several means for executing the resulting controller, and additional analyses aimed at helping engineers write higher-quality specifications. This hands-on tutorial will introduce participants to the language and the tool set, using examples and exercises, covering an end-to-end process from specification writing to synthesis to execution. The tutorial may be of interest to software engineers and researchers who are interested in the potential applications of formal methods to software engineering.

Important: To get the most out of the hands-on tutorial, please review the following resources prior to attending:

Video: Keynote given by Shahar Maoz at FormaliSE'20: https://youtu.be/ig8_PbkGito

Download and install the Spectra IDE. For instructions: http://smlab.cs.tau.ac.il/syntech/tutorial

Shahar Maoz is an Associate Professor at the School of Computer Science in Tel Aviv University, where he heads the Software Modeling Laboratory. Shahar has BSc and MSc computer science degrees from Tel Aviv University, and a PhD from the Weizmann Institute, Israel. From 2010 to 2012 he was a post-doc research fellow in RWTH Aachen University, Germany, with a fellowship from the Minerva Foundation. In 2015-2016 he spent a sabbatical at MIT CSAIL. Shahar's research interests are in software engineering, specifically in the use of models and formal methods for software evolution, model inference, testing, and synthesis. His work has been published in top software engineering and modeling conferences and journals. He has served multiple times on the program committees of ASE, ESEC/FSE, ICSE, and MoDELS conferences, and will be PC co-Chair for ASE'22. He is a recipient of an ERC Starting Grant for the development of synthesis technologies (project SYNTECH: http://smlab.cs.tau.ac.il/syntech/).

Jan Oliver Ringert is a Lecturer at the School of Informatics at University of Leicester. Jan has a Diploma from Technical University of Brunswick and a PhD from RWTH Aachen University. From 2013 to 2015 he was a post-doc research fellow in Tel Aviv University, with a fellowship from the Minerva Foundation. From 2015 to 2018 his post-doc research was funded through the SYNTECH project. Jan's research interests are in using formal methods for model-based software engineering with applications to autonomous systems. His work has been published in top software engineering and modeling conferences and journals. Jan has co-developed and taught classes on synthesis using Spectra at Tel Aviv University. He was lead developer of the Spectra Tools from 2014 to 2018. He obtained Fellowship status from the Higher Education Academy in 2020.

Decoding Grounded Theory for Software Engineering

Rashina Hoda Monash University

Thursday, May 27, 10:00 CEST (75 minutes)

Grounded Theory, while becoming increasingly popular in software engineering, is also one of the most misunderstood, misused, poorly presented and evaluated methods in software engineering. When applied well, GT results in dense and valuable explanations of how and why phenomena occur in practice. GT can be applied as a full research method leading to mature theories and also in limited capacity for data analysis within other methods, using its robust open coding and constant comparison procedures.

While it is difficult to provide a complete overview of GT with all its techniques and procedures in just over an hour, this technical briefing will aim to cover the following key areas:

- Origin of GT
- A brief summary of GT in software engineering – general state of practice and key challenges
- Examples of theories resulting from GT studies in SE research
- A gentle introduction to Socio-Technical Grounded Theory (STGT), a variant of GT for software engineering research

Important: To get the most out of the technical briefing, please review the following resources in advance. This will enable the briefing to have more room for open Q and A.

Resources for Preparation (please go through prior to attending)

- Paper: Hoda, R., Noble, J., & Marshall, S. (2012). Developing a grounded theory to explain the practices of self-organizing Agile teams. Empirical Software Engineering, 17(6), 609-639. Link to preprint: https://tinyurl.com/yyl5j8gz
- Video: A talk and QA with Rashina Hoda on Grounded Theory in Software Engineering, hosted by Prof Margaret-Anne Storey at the Empirical Software Engineering course, University of Victoria, Canada, 2020. Link: https://youtu.be/z-Yr27qtePM

Associate Professor **Rashina Hoda** is the Associate Dean (Academic Workforce) and Deputy Director of the HumaniSE Lab at Monash University, Melbourne. She is a leading international expert in the use of Grounded Theory in Software Engineering with over 15 years of experience in conducting, supervising, reviewing, and editing GT studies in SE. She is currently writing a book on the subject in contract with Springer, due for release in 2021, where she introduces Socio-Technical Grounded Theory, a variant of GT for socio-technical research. Rashina received a distinguished paper award at ICSE 2017 for her grounded theory of becoming agile and a distinguished reviewer award at ICSE 2019. In 2019-2020, Rashina contributed to the Grounded Theory Standards as part of the ACM SIGSOFT Empirical Standards with Christoph Treude. She serves on the Organising Committee of ICSE2021, as Program co-Chair of the CHASE 2021 conference co-located at ICSE, and on the Review Board of the IEEE Transactions on Software Engineering, specialising in agile and GT research. For more, please visit: www.rashina.com

Bayesian Data Analysis for Software Engineering

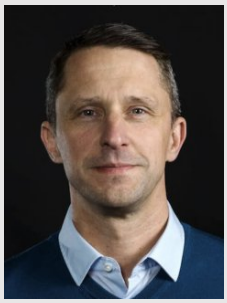
Richard Torkar Chalmers and University of Gothenburg, **Carlo A. Furia** Università della Svizzera italiana, **Robert Feldt** Chalmers University of Technology

Thursday, May 27, 19:20 CEST (110 minutes)

For over a decade now, other disciplines that heavily rely on analyzing empirical data—including medicine, psychology, economics, and marketing—have been in a sort of replication crisis. Among other things, this crisis originates in using inflexible or inadequate statistical practices to analyze small datasets collected in experiments conducted in conditions that poorly capture real-world scenarios, and are plagued by confounders that are hard to control. There is reason to believe software engineering might not be much better off. Given the broad and growing interest for statistical data analysis throughout the software engineering community, we will mainly focus on:

- limitations of the current most common statistical techniques in software engineering;
- principles underlying Bayesian data analysis;
- brief overview of the Bayesian statistical framework;
- key guidelines to apply Bayesian data analysis in practice;
- practical examples of Bayesian (re-)analysis of software engineering empirical data.

Bayesian statistics is not a silver bullet that will fix all the issues with empirical data analysis (in software engineering); but it can be an important step in the direction of helping empirical software engineering build solid foundations and achieve robust results.



Richard Torkar is a professor of software engineering at the Software Engineering Division, Chalmers and the University of Gothenburg; head of Software Engineering Division at the Department of Computer Science and Engineering; and senator at the Faculty Senate at Chalmers University of Technology. His main research interests cover both qualitative and quantitative studies, in areas such as psychology in software engineering, search-based software engineering, and software testing, with a particular focus on methods of analysis. He teaches Bayesian and frequentist statistics to bachelor, master, and Ph.D. students.

Carlo A. Furia is an associate professor at the Software Institute of USI's Faculty of Informatics. His main research interests center around developing rigorous techniques and tools to analyze and improve the quality, correctness, and reliability of software and systems. His interest in rigorous statistical practices grew out of dissatisfaction with the frustratingly counterintuitive features of frequentist statistics to analyze empirical data, and out of the fun of programming in R.

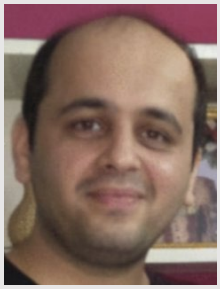
Robert Feldt is a professor of software engineering at the Software Engineering Division, Chalmers and the University of Gothenburg, and head of the Testing, Requirements, Innovation, and People (SE-TRIP) unit. He is also co-Editor in Chief of the Empirical Software Engineering (EMSE) Journal. He has broad research interests spanning from human factors to automation, statistics and machine learning, and works on software testing and quality, requirements engineering, as well as human-centered SE. Most of his research is empirical and conducted in close collaboration with industry partners.

Advances in Code Summarization

Utkarsh Desai, Giriprasad Sridhara, Srikanth Tamilselvam, IBM Research

Friday, May 28, 11:10 CEST (110 minutes)

Several studies have suggested that comments describing the code can help mitigate the burden of program understanding. However, software systems usually lack adequate comments and even when present, the comments may be obsolete or unhelpful. Researchers have addressed this issue by automatically generating comments from source code, a task referred to as Code Summarization. In this technical presentation, we take a deeper look at some of the significant, recent works in the area of code summarization and how each of them attempts to take a new perspective of this task including methods leveraging RNNs, Transformers, Graph representation learning and Reinforcement learning. We present a background of the techniques involved and how they are leveraged to solve the problem of code summarization. We review individual methods in detail, highlight their strengths and weaknesses and discuss future avenues for this task.



Utkarsh Desai is a member of the Application Modernization team at IBM Research, India. His present work is aimed at building AI powered solutions for automated refactoring of monolith applications into microservices. His research is focused on developing source code understanding models using current advances in Deep Learning to solve problems in Code Summarization, Code Search and Application refactoring. He has also worked on Time-Series modeling, Large-scale Recommendation Systems and Text Mining systems for Social media data in the past. He completed his Masters in Intelligent Systems from The University of Texas at Dallas in 2009.

Dr. Giriprasad Sridhara is a member of the application modernization team at IBM Research Labs, India. He was among the first to address the problem of code summarization in his doctoral dissertation "Automatic Generation of Descriptive Summary Comments for Methods in Object-Oriented Programs". He completed his Ph.D. in Computer Science from the University of Delaware, USA. His research interests span Software Engineering, Program Analysis, Machine Learning and Natural Language Processing. He has more than 20 publications in leading international conferences across the different areas. Currently, he is working on a variety of software engineering problems in the field of application modernization.

Srikanth Tamilselvam leads the application modernization research mission from India Research Labs. In this role, he is responsible for developing innovations that help IBM's clients to effectively transition to Hybrid Cloud via refactoring. Srikanth joined IBM in 2007 and throughout his career, Srikanth has taken up challenges that aim to improve productivity of developers. His works have also been accepted in top conferences like AAAI, WWW, IJCAI, ICSOC etc. He owns 60+ US patents. For his contributions to IBM target patent portfolio, Srikanth is also recognised as a Master Inventor. Srikanth holds a master's degree in computer science & Technology from Mysore University. His research interests include applications of Machine Learning, Natural Language Processing and HCI. Recently, his research focus is in applying AI on code-based tasks specifically code refactoring, clustering, summarisation and code search. Srikanth also regularly conducts workshops and tutorials on topics like Machine Learning, Introduction to Deep Learning, DevOps.

The Software Challenges of Building SmartChatbots

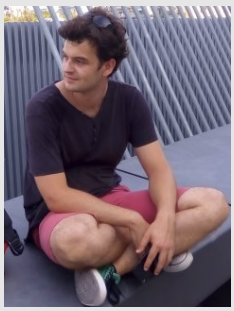
Gwendal Daniel, Jordi Cabot

Universitat Oberta de Catalunya, Internet Interdisciplinary Institute

Friday, May 28, 15:05 CEST (135 minutes)

Chatbots are popular solutions assisting humans in multiple fields, such as customer support or e-learning. However, building such applications has become a complex task requiring a high-level of expertise in a variety of technical domains. Chatbots need to integrate (AI-based) NLU components, but also connect to internal/external services, deploy on various platforms, etc.

The briefing will first cover the current landscape of chatbot frameworks. Then, we'll get our hands dirty and create a few bots of increasing difficulty playing with aspects like entity recognition, sentiment analysis, event processing, or testing. By the end of the session, attendees will have all the keys to understand the main steps and obstacles to building a good chatbot.



Gwendal Daniel is a post-doctoral fellow in the SOM Research Lab at Internet Interdisciplinary Institute (IN3), a research center of the Universitat Oberta de Catalunya (UOC). He received his PhD degree in 2017 in the AtlanMod Team, at the Ecole des Mines de Nantes, France. He received the best thesis award from the GDR-GPL and the INFORSID association in 2018. His current research focuses on applying model-based techniques for chatbot development. He is the co-founder and CTO of Xatkit, an open-source, model-driven, chatbot development framework.

Jordi Cabot received the B.Sc. and Ph.D. degrees in computer science from the Technical University of Catalonia. He was a Leader of an INRIA and LINA Research Group at Ecole des Mines de Nantes, France, a Post-Doctoral Fellow with the University of Toronto, a Senior Lecturer with the Open University of Catalonia, and a Visiting Scholar with the Politecnico di Milano. He is currently an ICREA Research Professor at Internet Interdisciplinary Institute. His research interests include software and systems modeling, formal verification and the role AI can play in software development (and vice versa). He has published over 200 peer-reviewed conference and journal papers on these topics. Apart from his scientific publications, he writes and blogs about all these topics in several sites like modeling-languages.com and livablesoftware.com. He is also the co-founder and CEO of Xatkit, an open-source chatbot development framework.

Co-located events

Co-located events are independent conferences and symposia that have chosen to be part of the ICSE conference week. Each event focuses on a special topic within software engineering.

Acronym	Full Name	Date	Links
AST	2nd ACM/IEEE International Conference on Automation of Software Test	May 20th – 21st	EVENT WEBPAGE → JOIN SESSION →
CHASE	14th International Conference on Cooperative and Human Aspects of Software Engineering	May 20th – 21st	EVENT WEBPAGE → JOIN SESSION → JOIN SESSION (CHASE COMMUNITY ROOM)→
FormaliSE	9th International Conference on Formal Methods in Software Engineering	May 18th – 21st	EVENT WEBPAGE → JOIN SESSION →
ICPC	29th IEEE/ACM International Conference on Program Comprehension	May 18th – 21th	EVENT WEBPAGE → JOIN SESSION → (MAIN ROOM) JOIN SESSION → (SOCIAL ROOM)
ICSSP/ICGSE	Joint 15th International Conference on Software and System Processes (ICSSP) and 16th ACM/IEEE International Conference on Global Software Engineering (ICGSE)	May 18th – 19th	EVENT WEBPAGE → JOIN SESSION →
MobileSoft	8th IEEE/ACM International Conference on Mobile Software Engineering and Systems	May 17th – 19th	EVENT WEBPAGE → JOIN SESSION →
MSR	The 2021 Mining Software Repositories Conference	May 17th – 19th	EVENT WEBPAGE → JOIN SESSION → (ROOM 1) JOIN SESSION → (ROOM 2)
SEAMS	16th Symposium on Software Engineering for Adaptive and Self-Managing Systems 2021	May 18th – 21st	EVENT WEBPAGE → JOIN SESSION →
TechDebt	International Conference on Technical Debt 2021	May 19th – 21st	EVENT WEBPAGE → JOIN SESSION →

Workshops

ICSE workshops provide forums for small-group discussions on topics in software engineering research and practice. Workshops also provide opportunities for researchers to exchange and discuss scientific and engineering ideas at an early stage. ICSE 2021 has 21 workshops; each is one or two days long.

Acronym	Full Name	Date	Links
APR	2nd International Workshop on Automated Program Repair	June 1st	WEBPAGE → JOIN SESSION →
BoKSS(*)	1st International Workshop on the Body of Knowledge for Software Sustainability	June 1st – 2nd	WEBPAGE →
BotSE	3rd International Workshop on Bots in Software Engineering	June 4th	WEBPAGE → JOIN SESSION →
Cloud Intelligence	Cloud Intelligence Workshop	May 29th	WEBPAGE → JOIN SESSION →
DeepTest	International Workshop on Testing for Deep Learning and Deep Learning for Testing	June 1st	WEBPAGE → JOIN SESSION →
EnCyCriS	2nd International Workshop on Engineering and Cybersecurity of Critical Systems	June 3rd	WEBPAGE → JOIN SESSION →
GI	10th International Workshop on Genetic Improvement	May 30th	WEBPAGE → JOIN SESSION →
MET	6th International Workshop on Metamorphic Testing	June 2nd	WEBPAGE → JOIN SESSION →
Q-SE	2nd International Workshop on Quantum Software Engineering	June 1st – 2nd	WEBPAGE → JOIN SESSION →
RoSE(*)	3rd International Workshop on Robotics Software Engineering	June 2nd	WEBPAGE →
SBST(*)	14th International Workshop on Search-Based Software Testing	May 31st	WEBPAGE →
SEENG(*)	3rd International Workshop on Software Engineering Education for the Next Generation!	May 24th	WEBPAGE →
SEH	3rd International Workshop on Software Engineering for Healthcare	June 3rd	WEBPAGE → JOIN SESSION →
SEmotion	6th International Workshop on Emotion Awareness in Software Engineering	May 31st	WEBPAGE → JOIN SESSION →
SER&IP(*)	8th International Workshop on Software Engineering Research and Industrial Practice	June 4th	WEBPAGE →
SERP4IoT(*)	3rd International Workshop on Software Engineering Research & Practices for the Internet of Things	June 3rd	WEBPAGE →
SESoS/ WDES	Joint 9th International Workshop on Software Engineering for Systems-of-Systems and 15th Workshop on Distributed Software Development, Software Ecosystems and Systems-of-Systems	June 3rd	WEBPAGE → JOIN SESSION →
SEthics	2nd Workshop on Ethics in Software Engineering Research and Practice	June 4th	WEBPAGE → JOIN SESSION →
SoHeal	4th International Workshop on Software Health in Projects, Ecosystems and Communities	May 29th	WEBPAGE → JOIN SESSION →
WAIN	1st Workshop on AI Engineering – Software Engineering for AI	May 30th – 31st	WEBPAGE → JOIN SESSION →
WETSEB	4th International Workshop on Emerging Trends in Software Engineering for Blockchain	May 31st	WEBPAGE → JOIN SESSION →

(*) the following Workshops are not held on Clowdr, but in alternate platforms. To get access please reach the Workshop organizer.

New Faculty Symposium

Becoming a new faculty member at a university or college is challenging due to the number of roles a faculty member plays and the lack of preparation for these roles. Few new faculty are prepared for the diversity of types of work they will be asked to undertake. Moreover, their doctoral training most likely has not prepared them for much beyond how to conduct research themselves and, perhaps, how to teach topics that are close to their research area. The goals of the ICSE 2021 New Faculty Symposium (NFS) are to help new Software Engineering faculty members launch a successful career and manage the challenges while feeling joy in their life as a faculty member. NFS will be held on May 19 and May 20 from 17:00 to 20:00 CEST.

The 2021 offering of ICSE's NFS will build on the successful formula of prior symposia by connecting prospective and junior faculty with experienced faculty members. The symposium will provide plenty of time for informal interaction and will facilitate conversations with a series of short talks covering a broad range of issues faced by faculty members as well as interactive sessions.

TIME CEST	Wednesday, May 19th	
16:00 – 17:15	NEW FACULTY SYMPOSIUM	16:00 – 17:15
	Welcome Marsha Chechik, Laurie Williams	16:00 – 16:05
	Challenges of being a New Faculty member Marsha Chechik, Laurie Williams	16:05 – 16:45
	Funding Sol Greenspan, Liliana Pasquale, Zhi Jin, John Grundy	16:45 – 17:15
	BREAK 10'	17:15 – 17:25
17:25 – 19:15	**Research** Alexander Serebrenik	17:25 – 18:05
	Multiculturalism, family, supporting students where they are at ***Participants fish bowl***	18:05 – 18:45
	Deep work / Productivity Laurie Williams	18:45 – 19:15

New Faculty Symposium

TIME CEST	Thursday, May 20th	
16:00 – 17:25	NEW FACULTY SYMPOSIUM	16:00 – 17:25
	Star	16:00 – 16:05
	Mental health / self care Birgit Penzenstadler	16:05 – 16:45
	Digital networking and community David C. Shepherd, Daniela Damian	16:45 – 17:25
	BREAK 10’	17:25 – 17:35
17:35 – 18:45	**Creativity** Prem Devanbu	17:35 – 18:15
	Open Q&A Marsha Chechik, Laurie Williams	18:15 – 18:45

The New Faculty Symposium is not held on Clowdr, but in an alternate platform. Please, contact New Faculty Symposium Organizers

Doctoral Symposium

The ICSE 2021 Doctoral Symposium is a one-day event to be held on May 21 and 24, 2021 in Madrid, Spain. The symposium provides doctoral students an opportunity to interact with their colleagues working on foundations, techniques, tools, and applications of software engineering.

The goals of the symposium are to:

- provide the participants independent and constructive feedback on their current research and future research directions;
- develop a supportive community of scholars and a spirit of collaborative research; and
- provide an opportunity for student participants to interact with established researchers and practitioners in the software engineering community.

TIME CEST	Friday, May 21st (1/2)	
17:00 – 17:10	WELCOME Chairs: Sebastian Uchitel, Sira Vegas	17:00 – 17:10
17:10 – 18:10	GET TO KNOW YOUR PEERS 1 Chair: Betty H.C. Cheng	17:10 – 18:10
	GET TO KNOW YOUR PEERS 2 Chair: Laura Dillon	17:10 – 18:10
	GET TO KNOW YOUR PEERS 3 Chair: Ignacio Panach	17:10 – 18:10
18:10 – 18:25	COFFEE WITH DS ATTENDEES	18:10 – 18:25

TIME CEST	Friday, May 21st (2/2)	
18:25 – 19:55	**EARLY PHD 1** Chair: Dalal Alrajeh Advisors: Dalal Alrajeh, Joanne M. Atlee, Jane Cleland-Huang	18:25 – 19:55
	Unburdening onboarding in Software Product Lines Raul Medeiros	18:25 – 18:55
	Extractive Multi Product-Line Engineering Kamil Rosiak	18:55 – 19:25
	Group Recommendation Techniques for Feature Modeling and Configuration Viet-Man Le	19:25 – 19:55
	EARLY PHD 2 Chair: Sira Vegas Advisors: Elisabetta Di Nitto, Jocelyn Simmonds, Claes Wohlin	18:25 – 19:55
	A proposal to systematize introducing DevOps into the software development process Luciano Aguiar Monteiro	18:25 – 18:55
	A Model using agile methodologies for defining metrics to be used by the Public Sector in Brazil to set remuneration for outsourced software development Washington Almeida	18:55 – 19:25
	Learning to Boost the Efficiency of Modern Code Review Robert Heumüller	19:25 – 19:55
	EARLY PHD 3 Chair: Sebastian Uchitel Advisors: Nazareno Aguirre, Sebastian Elbaum, David Rosenblum	18:25 – 19:55
	Towards a testing tool that learns to test Olivia Rodriguez Valdes	18:25 – 18:55
	A functional paradigm for Capacity Planning of Cloud Computing Workloads Carlos Diego Cavalcanti Pereira	18:55 – 19:25
	Interactive Graph Exploration for Comprehension of Static Analysis Results Rafael Toledo	19:25 – 19:55
19:55 – 20:10	COFFEE WITH DS ATTENDEES	19:55 – 20:10
20:10 – 20:55	**PANEL** Chairs: Sira Vegas, Sebastian Uchitel	20:10 – 20:55
	Panelists: Nazareno Aguirre, Dalal Alrajeh, Jane Cleland-Huang, Sebastian Elbaum	

Doctoral Symposium

TIME CEST	Monday, May 24th	
17:00 – 17:05	WELCOME Chairs: Sira Vegas, Sebastian Uchitel	17:00 – 17:05
17:05 – 18:35	LATE PHD 1 Chair: Sira Vegas Advisors: Dalal Alrajeh, Jane Cleland-Huang, Laura Dillon, Rafael Prikladnicki, David Rosenblum	17:05 – 18:35
	Data Analytics Techniques and Tool for Model-Driven Engineering of Smart IoT Services Armin Moin	17:05 – 17:35
	Please Don't Go - A Comprehensive Approach to Increase Women's Participation in Open Source Software Bianca Trinkenreich	17:35 – 18:05
	Speculative Analysis for Quality Assessment of Code Comments Pooja Rani	18:05 – 18:35
18:35 – 18:50	COFFEE WITH DS ATTENDEES	18:35 – 18:50
18:50 – 20:20	LATE PHD 2 Chair: Sebastian Uchitel Advisors: Nazareno Aguirre, Tevfik Bultan, Betty H.C. Cheng	18:50 – 20:20
	Vulnerability Detection is Just the Beginning Sarah Elder	18:50 – 19:20
	High-Quality Automated Program Repair Manish Motwani	19:20 – 19:50
	On the Interplay Between Static and Dynamic Analysis for Mining Sandboxes Francisco Costa	19:50 – 20:20
20:20 – 20:35	CLOSING Chairs: Sira Vegas, Sebastian Uchitel	20:20 – 20:35

The Doctoral Symposium is not held on Clowdr, but in an alternate platform. To get access please contact Doctoral Symposium Organizers.

Detailed Program: May 25th

Tuesday, May 25th (1/11)

TIME CEST LIVE	TIME CEST MIRROR			
10:00 – 10:30	22:00 – 22:30	OPENING CEREMONY Natalia Juristo, Arie van Deursen, Tao Xie		10:00 – 10:30 22:00 – 22:30 MIRROR
10:30 – 11:30	22:30 – 23:30	BLENDED SESSION	CODE REVIEW: AUTOMATION Chair: Antonia Bertolino	10:30 – 11:30 22:30 – 23:30 MIRROR
		SEIP	**LightSys: Lightweight and Efficient CI System for Improving Integration Speed of Software** Geunsik Lim, MyungJoo Ham, Jijoong Moon, Wook Song	10:30 – 10:50
		SEIP	**Using Machine Intelligence to Prioritise Code Review Requests** Nishrith Saini, Ricardo Britto	10:50 – 11:10
		Technical Track	**Towards Automating Code Review Activities** Rosalia Tufano, Luca Pascarella, Michele Tufano, Denys Poshyvanyk, Gabriele Bavota	11:10 – 11:30
		BLENDED SESSION	DEVELOPERS: BEHAVIOR Chair: Andrea Zisman	10:30 – 11:30 22:30 – 23:30 MIRROR
		SEIP	**A Passion for Security: Intervening to Help Software Developers** Charles Weir, Ingolf Becker, Lynne Blair	10:30 – 10:50
		Technical Track	**"Do this! Do that!, And nothing will happen" Do specifications lead to securely stored passwords?** Joseph Hallett, Nikhil Patnaik, Benjamin Shreeve, Awais Rashid	10:50 – 11:10
		Technical Track	**Why don't Developers Detect Improper Input Validation?'; DROP TABLE Papers; --** Larissa Braz, Enrico Fregnan, Gül Calikli, Alberto Bacchelli ***Awarded paper:*** ACM SIGSOFT Distinguished Paper Award	11:10 – 11:30
		BLENDED SESSION	DEEP NEURAL NETWORKS: VALIDATION 1 Chair: Oscar Dieste	10:30 – 11:30 22:30 – 23:30 MIRROR
		Technical Track	**Operation is the hardest teacher: estimating DNN accuracy looking for mispredictions** Antonio Guerriero, Roberto Pietrantuono, Stefano Russo	10:30 – 10:50
		Technical Track	**AUTOTRAINER: An Automatic DNN Training Problem Detection and Repair System** Xiaoyu Zhang, Juan Zhai, Shiqing Ma, Chao Shen	10:50 – 11:10
		Technical Track	**Self-Checking Deep Neural Networks in Deployment** Yan Xiao, Ivan Beschastnikh, David S. Rosenblum, Changsheng Sun, Sebastian Elbaum, Yun Lin, Jin Song Dong	11:10 – 11:30

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All times in **CEST**

Detailed Program: May 25th

TIME CEST LIVE	TIME CEST MIRROR	Tuesday, May 25th (2/11)			
10:30 – 11:30	22:30 – 23:30	BLENDED SESSION	OBTAINING INFORMATION FROM APP USER REVIEWS 1 Chair: Patricia Lago	10:30 – 11:30 22:30 – 23:30 MIRROR	→
		Technical Track	**Identifying Key Features from App User Reviews** Huayao Wu, Wenjun Deng, Xintao Niu, Changhai Nie	10:30 – 10:50	
		Technical Track	**CHAMP: Characterizing Undesired App Behaviors from User Comments based on Market Policies** Yangyu Hu, Haoyu Wang, Tiantong Ji, Xusheng Xiao, Xiapu Luo, Peng Gao, Yao Guo	10:50 – 11:10	
		Technical Track	**Prioritize Crowdsourced Test Reports via Deep Screenshot Understanding** Shengcheng Yu, Chunrong Fang, Zhenfei Cao, Xu Wang, Tongyu Li, Zhenyu Chen	11:10 – 11:30	
11:30 – 12:00	23:30 – 00:00	NETWORKING	MEET YOUR PEERS	11:30 – 12:00 23:30 – 00:00 LIVE EVENT	→
		In this series of speed networking events, ICSE participants can meet their academic peers **Human aspects** **AI and software engineering (AI for SE, SE for AI)** **Testing** **Program analysis** **Open (any topic)** **Software evolution and maintenance** **Requirements, design, modeling**			
11:30 – 13:30	---	ACM SRC	ACM STUDENTS RESEARCH COMPETITION: POSTER SESSION 1 Chairs: Sergio Segura, Aurora Ramírez	11:30 – 13:30 LIVE SCHEDULE ONLY	→

Artifact Available Artifact Reusable

All times in **CEST**

Detailed Program: May 25th

TIME CEST LIVE	TIME CEST MIRROR	Tuesday, May 25th (3/11)		
12:05 – 13:15	00:05 – 01:15	BLENDED SESSION	**DEEP NEURAL NETWORKS: VALIDATION 2** Chair: Grace Lewis	12:05 – 13:05 00:05 – 01:05 MIRROR
		Technical Track	**Measuring Discrimination to Boost Comparative Testing for Multiple Deep Learning Models** Linghan Meng, Yanhui Li, Lin Chen, Zhi Wang, Di Wu, Yuming Zhou, Baowen Xu	12:05 – 12:25
		Technical Track	**Prioritizing Test Inputs for Deep Neural Networks via Mutation Analysis** Zan Wang, Hanmo You, Junjie Chen, Yingyi Zhang, Xuyuan Dong, Wenbin Zhang	12:25 – 12:45
		Technical Track	**Testing Machine Translation via Referential Transparency** Pinjia He, Clara Meister, Zhendong Su	12:45 – 13:05
		BLENDED SESSION	**SEARCH-BASED SE & GENETIC OPERATIONS** Chair: José Miguel Rojas	12:05 – 13:05 00:05 – 01:05 MIRROR
		Journal First	**Quality Indicators in Search-Based Software Engineering: An Empirical Evaluation** Shaukat Ali, Paolo Arcaini, Dipesh Pradhan, Safdar Aqeel Safdar, Tao Yue	12:05 – 12:25
		Journal First	**Utilizing Automatic Query Reformulations as Genetic Operations to Improve Feature Location in Software Models** Francisca Pérez, Tewfik Ziadi, Carlos Cetina	12:25 – 12:45
		Technical Track	**Enhancing Genetic Improvement of Software with Regression Test Selection** Giovani Guizzo, Justyna Petke, Federica Sarro, Mark Harman ***Awarded:*** Distinguished Artifact Award – Artifact	12:45 – 13:05
		BLENDED SESSION	**DEVELOPERS: GENERAL ISSUES** Chair: Oscar Pastor	12:05 – 13:15 00:05 – 01:15 MIRROR
		Technical Track	**Do you really code? Designing and Evaluating Screening Questions for Online Surveys with Programmers** Anastasia Danilova, Alena Naiakshina, Stefan Horstmann, Matthew Smith	12:05 – 12:25
		Technical Track	**How Gamification Affects Software Developers: Cautionary Evidence from a Natural Experiment on GitHub** Lukas Moldon, Markus Strohmaier, Johannes Wachs	12:25 – 12:45
		SEIS	**Exploring the Role of Creativity in Software Engineering** Wouter Groeneveld, Laurens Luyten, Joost Vennekens, Kris Aerts	12:45 – 13:00
		SEIS	**Résumé-Driven Development: A Definition and Empirical Characterization** Jonas Fritzsch, Marvin Wyrich, Justus Bogner, Stefan Wagner	13:00 – 13:15

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Detailed Program: May 25th

Tuesday, May 25th (4/11)

TIME CEST LIVE	TIME CEST MIRROR			
12:05 – 13:15	00:05 – 01:15	BLENDED SESSION	**SOFTWARE REQUIREMENTS** Chair: Birgit Penzenstadler	12:05 – 13:15 00:05 – 01:15 MIRROR
		Technical Track	**How to identify Boundary Conditions with Contrasty Metric?** Weilin Luo, Hai Wan, Xiaotong Song, Binhao Yang, Hongzhen Zhong, Yin Chen	12:05 – 12:25
		Technical Track	**Using Domain-specific Corpora for Improved Handling of Ambiguity in Requirements** Saad Ezzini, Sallam Abualhaija, Chetan Arora, Mehrdad Sabetzadeh, Lionel C. Briand	12:25 – 12:45
		SEIS	**Investigating the potential impact of values on requirements and software engineering** Alistair Sutcliffe, Peter Sawyer, Wei Liu, Nelly Bencomo	12:45 – 13:00
		NIER	**Validation Obligations: A Novel Approach to check Compliance between Requirements and their Formal Specification** Atif Mashkoor, Michael Leuschel, Alexander Egyed	13:00 – 13:15
		JSEET	**TEACHING SOFTWARE QUALITY I** Chairs: Ana María Moreno and Hakan Erdogmus	12:05 – 13:05 00:05 – 01:15 MIRROR
		JSEET	**GitHub-OSS Fixit: Fixing bugs at scale in a Software Engineering Course** Shin Hwei Tan, Chunfeng Hu, Ziqiang Li, Xiaowen Zhang and Ying Zhou	12:05 – 12:25
		JSEET	**Learning Software Quality Assurance with Bricks** Miguel Ehécatl Morales Trujillo	12:25 – 12:45
		JSEET	**Assessing the Students' Understanding and their Mistakes in Code Review Checklists -An Experience Report of 1,791 Code Review Checklists from 394 Students** Chun Yong Chong, Patanamon Thongtanunam and Chakkrit Tantithamthavorn	12:45 – 13:05
			BREAK 30'	13:15 – 13:45 01:15 – 01:45 MIRROR
13:45 – 14:45	01:45 – 02:45	AWARDS	**TECHNICAL TRACK AWARDS AND ACM EUROPE COUNCIL BEST PAPER AWARD** Chairs: George Eleftherakis, Arie van Deursen, Tao Xie	13:45 – 14:00 01:45 – 02:00 MIRROR
		KEYNOTE	**DARÍO GIL** Chair: Arie van Deursen	14:00 – 14:45 02:00 – 02:45 MIRROR
			Brief summary of the Keynote here	
14:45 – 15:15	02:45 – 03:15	MEET WITH	**MEET DARÍO GIL**	14:45 – 15:15 02:45 – 03:15 MIRROR
			Do you want to have the opportunity to meet and chat with the Keynotes and main Awardees from ICSE 2021? We are more than sure that after their interesting and inspired talks, you would have a lot of questions and comments for them, so join their corresponding sessions to get the chance of meeting and chatting with them	

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Detailed Program: May 25th

Tuesday, May 25th (5/11)

TIME CEST LIVE	TIME CEST MIRROR			
14:45 – 15:15	02:45 – 03:15	NETWORKING	INTRODUCTION TO GATHER.TOWN Chair: Fabiano Pecorelli, Davide Fucci, Carolin Brandt	14:45 – 15:15 02:45 – 03:15 MIRROR
		NETWORKING	COST ACTION NETWORK ON GENDER BALANCE Chair: Valentina Lenarduzzi	14:45 – 15:15 MIRROR IN MAY 26th (+32h) 22:45 – 23:15 MIRROR
		Gender balance in Informatics, are we there yet? We are working to support and to achieve gender balance. Which is your experience? Please share with us!		
		NETWORKING	YOGA AND BREATHWORKS Chair: Birgit Penzenstadler	14:45 – 15:15 LIVE SCHEDULE ONLY
		The yoga sessions are short introductory sessions to pranayama (working with the breath), asana (stretching), and meditation. No prior knowledge required - put on some comfy clothes and find a space to relax in.		
		HUAWEI	SE RESEARCH @ HUAWEI	MIRROR SCHEDULE ONLY 02:45 – 03:15 LIVE EVENT
		Meeting SE Researchers at Huawei		
		POSTERS	POSTERS 1 Chair: Federica Sarro	14:45 – 15:15 02:45 – 03:15 MIRROR
		Each poster makes a 2-minute presentation (displayed in the Poster room). At the end of each presentation, a breakout room will be created for each poster. Attendees will be able to join and discuss with the authors.		
		POSTER	**Designing Tester and Sampler in Tandem** Mate Soos, Priyanka Golia, Sourav Chakraborty, Kuldeep S. Meel	
		POSTER	**Team-oriented Consistency Checking of Heterogeneous Engineering Artifacts** Michael Alexander Tröls, Atif Mashkoor, Alexander Egyed	
		POSTER	**RPT: Effective and Efficient Retrieval of Program Translations from Big Code** Binger Chen, Ziawasch Abedjan	
15:00 – 16:15	03:00 – 04:15	TECHNICAL BRIEFING	NLP FOR REQUIREMENTS ENGINEERING: TASKS, TECHNIQUES, TOOLS, AND TECHNOLOGIES Chair: Xavier Franch	15:00 – 16:15 03:00 – 04:15 MIRROR
		NLP for Requirements Engineering: Tasks, Techniques, Tools, and Technologies Alessio Ferrari, Liping Zhao, Waad Alhoshan		

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Detailed Program: May 25th

TIME CEST LIVE	TIME CEST MIRROR	Tuesday, May 25th (6/11)		
15:20 – 16:15	03:20 – 04:15	BLENDED SESSION	**QUALITY ASSURANCE** Chair: Silvia Abrahao	15:20 – 16:15 03:20 – 04:15 MIRROR →
		Technical Track	**Supporting Quality Assurance with Automated Process-Centric Quality Constraints Checking** Christoph Mayr-Dorn, Michael Vierhauser, Stefan Bichler, Felix Keplinger, Jane Cleland-Huang, Alexander Egyed, Thomas Mehofer	15:20 – 15:40
		NIER	**Inconsistency-tolerating guidance for software engineering processes** Christoph Mayr-Dorn, Roland Kretschmer, Alexander Egyed, Ruben Heradio, David Fernandez-Amoros	15:40 – 15:55
		Technical Track	**Understanding Bounding Functions in Safety-Critical UAV Software** Xiaozhou Liang, John Henry Burns, Joseph Sanchez, Karthik Dantu, Lukasz Ziarek, Yu David Liu	15:55 – 16:15
		BLENDED SESSION	**DEEP NEURAL NETWORKS: SUPPORTING SE TASKS 1** Chair: Ayse Tosun	15:20 – 16:15 03:20 – 04:15 MIRROR →
		Journal First	**CODIT: Code Editing with Tree-Based Neural Models** Saikat Chakraborty, Yangruibo Ding, Miltiadis Allamanis, Baishakhi Ray	15:20 – 15:40
		Technical Track	**Traceability Transformed: Generating moreAccurate Links with Pre-Trained BERT Models** Jinfeng Lin, Yalin Liu, Qingkai Zeng, Meng Jiang, Jane Cleland-Huang ***Awarded paper:*** ACM SIGSOFT Distinguished Paper Award	15:40 – 16:00
		NIER	**A Cognitive and Machine Learning-Based Software Development Paradigm Supported by Context** Glaucia Melo, Paulo Alencar, Don Cowan	16:00 – 16:15
		BLENDED SESSION	**OPEN SCIENCE** Chair: Sira Vegas	15:20 – 16:15 03:20 – 04:15 MIRROR →
		Journal First	**What Makes a Popular Academic AI Repository?** Yuanrui Fan, Xin Xia, David Lo, Ahmed E. Hassan, Shanping Li	15:20 – 15:40
		Journal First	**Publish or Perish, but do not Forget your Software Artifacts** Robert Heumüller, Sebastian Nielebock, Jacob Krüger, Frank Ortmeier	15:40 – 16:00
		NIER	**Stop Building Castles on a Swamp! The Crisis of Reproducing Automatic Search in Evidence-based Software Engineering** Zheng Li	16:00 – 16:15

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Detailed Program: May 25th

Tuesday, May 25th (7/11)

TIME CEST LIVE	TIME CEST MIRROR			
15:20 – 16:15	03:20 – 04:15	BLENDED SESSION	**OBTAINING INFORMATION FROM APP USER REVIEWS 2** Chair: Birgit Penzenstadler	15:20 – 16:15 03:20 – 04:15 MIRROR
		SEIS	**Does Culture Matter? Impact of Individualism and Uncertainty Avoidance on App Reviews** Ricarda Anna-Lena Fischer, Rita Walczuch, Emitzá Guzmán	15:20 – 15:35
		Technical Track	**Automatically Matching Bug Reports With Related App Reviews** Marlo Haering, Christoph Stanik, Walid Maalej	15:35 – 15:55
		Technical Track	**It Takes Two to Tango: Combining Visual and Textual Information for Detecting Duplicate Video-Based Bug Reports** Nathan Cooper, Carlos Bernal-Cárdenas, Oscar Chaparro, Kevin Moran, Denys Poshyvanyk	15:55 – 16:15
16:15 – 16:35	04:15 – 04:35	SOCIAL	**GUITAR CONCERT**	16:15 – 16:35 04:15 – 04:35 MIRROR
		A live guitar micro concert (20 minutes) broadcasted by a colleague from the SE group at the Caceres University from the monumental ancient city of Caceres.		
16:40 – 17:35	04:40 – 05:35	BLENDED SESSION	**VARIABILITY AND PRODUCT LINES** Chair: Joanne M. Atlee	16:40 – 17:35 04:40 – 05:35 MIRROR
		NIER	**Bridging the Gap Between Clone-and-Own and Software Product Lines** Timo Kehrer, Thomas Thüm, Alexander Schultheiß, Paul Maximilian Bittner	16:40 – 16:55
		Technical Track	**Seamless Variability Management With the Virtual Platform** Wardah Mahmood, Daniel Strüber, Thorsten Berger, Ralf Laemmel, Mukelabai Mukelabai	16:55 – 17:15
		SEIP	**Challenges of Implementing Software Variability in Eclipse OMR: An Interview Study** Batyr Nuryyev, Sarah Nadi, Nazim Bhuiyan, Leonardo Banderali	17:15 – 17:35
		BLENDED SESSION	**CONTINUOUS INTEGRATION** Chair: Daniela Damian	16:40 – 17:35 04:40 – 05:35 MIRROR
		Journal First	**A Machine Learning Approach to Improve the Detection of CI Skip Commits** Rabe Abdalkareem, Suhaib Mujahid, Emad Shihab	16:40 – 17:00
		Technical Track	**What helped, and what did not? An Evaluation of the Strategies to Improve Continuous Integration** Xianhao Jin, Francisco Servant	17:00 – 17:20
		NIER	**ADEPT: A Socio-Technical Theory of Continuous Integration** Omar Elazhary, Margaret-Anne Storey, Neil Ernst, Elise Paradis	17:20 – 17:35

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Detailed Program: May 25th

TIME CEST LIVE	TIME CEST MIRROR	Tuesday, May 25th (8/11)			
16:40 – 17:35	04:40 – 05:35	BLENDED SESSION	IDENTIFYING INFORMATION LEAKS Chair: Oscar Dieste	16:40 – 17:35 04:40 – 05:35 MIRROR	→
		NIER	**An Axiomatic Approach to Detect Information Leaks in Concurrent Programs** Sandip Ghosal, R.K. Shyamasundar	16:40 – 16:55	
		Technical Track	**Abacus: Precise Side-Channel Analysis** Qinkun Bao, Zihao Wang, Xiaoting Li, James Larus, Dinghao Wu	16:55 – 17:15	
		Technical Track	**Data-Driven Synthesis of a Provably Sound Side Channel Analysis** Jingbo Wang, Chungha Sung, Mukund Raghothaman, Chao Wang	17:15 – 17:35	
		BLENDED SESSION	DEVELOPERS: ONBOARDING Chair: Gail Murphy	16:40 – 17:35 04:40 – 05:35 MIRROR	→
		SEIP	**Please Turn Your Cameras On: Remote Onboarding of Software Developers during a Pandemic** Paige Rodeghero, Thomas Zimmermann, Brian Houck, Denae Ford	16:40 – 17:00	
		NIER	**Exploring the Efficiency of Self-Organizing Software Teams with Game Theory** Clay Stevens, Jared Soundy, Hau Chan	17:00 – 17:15	
		Technical Track	**A Case Study of Onboarding in Software Teams: Tasks and Strategies** An Ju, Hitesh Sajnani, Scot Kelly, Kim Herzig	17:15 – 17:35	
			BREAK 15'	17:35 – 17:50 05:35 – 05:50 MIRROR	
17:50 – 19:00	05:50 – 07:00	AWARDS	ACM SIGSOFT OUTSTANDING RESEARCH AWARD Chair: Thomas Zimmermann	17:50 – 18:00 05:50 – 06:00 MIRROR	→
		KEYNOTE + AWARD LECTURE	PREM DEVANBU Chair: Thomas Zimmermann	18:00 – 19:00 06:00 – 07:00 MIRROR	→
			Naturalness and Bimodality of Code: A Research Overview Brief summary of the Keynote here		
19:00 – 19:30	07:00 – 07:30	MEET WITH	MEET PREM DEVANBU	19:00 – 19:30 07:00 – 07:30 MIRROR	→
			Do you want to have the opportunity to meet and chat with the Keynotes and main Awardees from ICSE 2021? We are more than sure that after their interesting and inspired talks, you would have a lot of questions and comments for them, so join their corresponding sessions to get the chance of meeting and chatting with them		

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Detailed Program: May 25th

TIME CEST LIVE	TIME CEST MIRROR	Tuesday, May 25th (9/11)

19:00 – 19:30 / 07:00 – 07:30

NETWORKING — COMMUNITY SPEED NETWORKING — 19:00 – 19:30 LIVE SCHEDULE ONLY

In this series of speed networking events, ICSE participants can meet their peers.

Speed Networking: Hablamos Español

NETWORKING — COFFEE CHAT — 19:00 – 19:30 / 07:00 – 07:30 LIVE EVENT

If we were meeting in person, there would be conversations around coffee tables in many different languages. To imitate this informal interaction we organise a series of chat room meetings in different languages.

Women in Software Engineering Research	(19:00 – 19:30 and 07:00 – 07:30)
Μιλάμε ελληνικά Eleni Constantinou	(19:00 – 19:30 ONLY)
Falamos português! Igor Steinmacher	(19:00 – 19:30 ONLY)
On parle français Fabio Petrillo	(19:00 – 19:30 ONLY)
Parliamo italiano Valentina Lenarduzzi	(19:00 – 19:30 ONLY)
Blacks in Software Engineering	(19:00 – 19:30 ONLY)
Hablamos español José Miguel Rojas	(07:00 – 07:30 ONLY)

NETWORKING — ICSE IS RUNNING — Chairs: Luís Cruz, Ayushi Rastogi — 19:00 – 19:30 / 07:00 – 07:30 MIRROR

The first-ever virtual run event at ICSE! From 25-27, May 2021 AOE attendees from all over the world will run 5 km. Join us! #ICSE21isRunning

INVENIA LABS — OPPORTUNITIES AT INVENIA LABS — 19:00 – 19:30 LIVE SCHEDULE ONLY

A chance to network with members of the Invenia Labs team and ask questions about what Invenia is working on.

POSTERS — POSTERS 2 — Chair: Davide Fucci — 19:00 – 19:30 / 07:00 – 07:30 MIRROR

Each poster makes a 2-minute presentation (displayed in the Poster room). At the end of each presentation, a breakout room will be created for each poster. Attendees will be able to join and discuss with the authors.

POSTER	**Finding Metamorphic Relations for Scientific Software** Xuanyi Lin, Zedong Peng, Nan Niu, Wentao Wang, Hui Liu
POSTER	**Understanding Language Selection in Multi-Language Software Projects on GitHub** Wen Li, Na Meng, Li Li, Haipeng Cai
POSTER	**We'll Fix It in Post: What Do Bug Fixes in Video Game Update Notes Tell Us?** Andrew Truelove, Eduardo Santana de Almeida, Iftekhar Ahmed

19:00 – 21:15 / ---

ACM SRC — ACM STUDENTS RESEARCH COMPETITION: POSTER SESSION 2 — Chairs: Aurora Ramírez, Sergio Segura — 19:00 – 21:00 LIVE SCHEDULE ONLY

SCORE — SCORE FINALISTS — Chairs: Sarah Beecham, Patanamon Thongtanunam, Igor Steinmacher, Fabio Calefato — 19:00 – 21:15 LIVE SCHEDULE ONLY

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Detailed Program: May 25th

TIME CEST LIVE	TIME CEST MIRROR	Tuesday, May 25th (10/11)		
19:35 – 20:55	07:35 – 08:55	BLENDED SESSION	**DEEP NEURAL NETWORKS: GENERAL ISSUES** Chair: Ignacio Panach	19:35 – 20:55 07:35 – 08:55 MIRROR →
		SEIP	**Asset Management in Machine Learning: A Survey** Samuel Idowu, Daniel Strüber, Thorsten Berger	19:35 – 19:55
		Technical Track	**An Empirical Study of Refactorings and Technical Debt in Machine Learning Systems** Yiming Tang, Raffi Khatchadourian, Mehdi Bagherzadeh, Rhia Singh, Ajani Stewart, Anita Raja	19:55 – 20:15
		Journal First	**Logram: Efficient Log Parsing Using n-Gram Dictionaries** Hetong Dai, Heng Li, Che-Shao Chen, Weiyi Shang, Tse-Hsun (Peter) Chen	20:15 – 20:35
		Technical Track	**DeepLocalize: Fault Localization for Deep Neural Networks** Mohammad Wardat, Wei Le, Hridesh Rajan	20:35 – 20:55
		BLENDED SESSION	**DEVELOPERS: OBSERVATIONAL STUDIES** Chair: Carolyn Seaman	19:35 – 20:55 07:35 – 08:55 MIRROR →
		Journal First	**What Leads to a Confirmatory or Disconfirmatory Behaviour of Software Testers?** Iflaah Salman, Pilar Rodriguez, Burak Turhan, Ayse Tosun, Arda Gureller	19:35 – 19:55
		SEIP	**An interview study of how developers use execution logs in embedded software engineering** Nan Yang, Pieter Cuijpers, Ramon Schiffelers, Johan Lukkien, Alexander Serebrenik	19:55 – 20:15
		Technical Track	**Relating Reading, Visualization, and Coding for New Programmers: A Neuroimaging Study** Madeline Endres, Zachary Karas, Xiaosu Hu, Ioulia Kovelman, Westley Weimer	20:15 – 20:35
		Journal First	**Explicit Programming Strategies** Thomas LaToza, Maryam Arab, Dastyni Loksa, Amy Ko	20:35 – 20:55
		BLENDED SESSION	**API: USAGE AND REFACTORING** Chair: Giuseppe Scanniello	19:35 – 20:55 07:35 – 08:55 MIRROR →
		SEIP	**Automatically Identifying Parameter Constraints in Complex Web APIs: A Case Study at Adyen** Henk Grent, Aleksei Akimov, Maurício Aniche	19:35 – 19:55
		Technical Track	**SOAR: A Synthesis Approach for Data Science API Refactoring** Ansong Ni, Daniel Ramos, Aidan Z.H. Yang, Ines Lynce, Vasco Manquinho, Ruben Martins, Claire Le Goues 	19:55 – 20:15
		Journal First	**Studying Ad Library Integration Strategies of Top Free-to-Download Apps** Md Ahasanuzzaman, Safwat Hassan, Ahmed E. Hassan	20:15 – 20:35
		Technical Track	**Are Machine Learning Cloud APIs Used Correctly?** Chengcheng Wan, Shicheng Liu, Henry Hoffmann, Michael Maire, Shan Lu 	20:35 – 20:55

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TIME CEST LIVE	TIME CEST MIRROR	Tuesday, May 25th (11/11)		
19:35 – 20:55	07:35 – 08:55	BLENDED SESSION	**OPEN SOURCE: PARTICIPANTS' MOTIVATIONS** Chair: Gregorio Robles	19:35 – 20:55 07:35 – 08:55 MIRROR
		Technical Track	**Leaving My Fingerprints: Motivations and Challenges of Contributing to OSS for Social Good** Yu Huang, Denae Ford, Thomas Zimmermann	19:35 – 19:55
		Journal First	**Studying the Association between Bountysource Bounties and the Issue-addressing Likelihood of GitHub Issue Reports** Jiayuan Zhou, Shaowei Wang, Cor-Paul Bezemer, Ying Zou, Ahmed E. Hassan	19:55 – 20:15
		Technical Track	**Onboarding vs. Diversity, Productivity and Quality -- Empirical Study of the OpenStack Ecosystem** Armstrong Foundjem, Ellis E. Eghan, Bram Adams	20:15 – 20:35
		Technical Track	**The Shifting Sands of Motivation: Revisiting What Drives Contributors in Open Source** Marco Gerosa, Igor Scaliante Wiese, Bianca Trinkenreich, Georg Link, Gregorio Robles, Christoph Treude, Igor Steinmacher, Anita Sarma	20:35 – 20:55
		BLENDED SESSION	**DEVELOPERS: NAMING METHODS AND VARIABLES** Chair: José Miguel Rojas	19:35 – 20:55 07:35 – 08:55 MIRROR
		Journal First	**How Developers Choose Names** Dror Feitelson, Ayelet Mizrahi, Nofar Noy, Aviad Ben Shabat, Or Eliyahu, Roy Sheffer	19:35 – 19:55
		Technical Track	**IdBench: Evaluating Semantic Representations of Identifier Names in Source Code** Yaza Wainakh, Moiz Rauf, Michael Pradel	19:55 – 20:15
		Technical Track	**A Context-based Automated Approach for Method Name Consistency Checking and Suggestion** Yi Li, Shaohua Wang, Tien N. Nguyen	20:15 – 20:35
		Technical Track	**On the Naming of Methods: A Survey of Professional Developers** Reem S. Alsuhaibani, Christian D. Newman, Michael J. Decker, Michael L. Collard, Jonathan I. Maletic	20:35 – 20:55
19:35 – 21:50	07:35 – 09:50	TECHNICAL BRIEFING	**HANDS-ON SESSION ON THE DEVELOPMENT OF TRUSTWORTHY AI SOFTWARE** Chair: Grace Lewis	19:35 – 21:50 07:35 – 09:50 MIRROR
			Hands-On Session on the Development of Trustworthy AI software Ville Vakkuri, Kai-Kristian Kemell, Pekka Abrahamsson	
20:55 – 21:40	08:55 – 09:40	PANEL	**ARE ACADEMICS WORKING ON THE RIGHT PROBLEMS?** Chairs: David C. Shepherd, Davide Falessi	20:55 – 21:40 THURSDAY 27TH 11:00 – 11:45 (MIRROR)
			Felienne Hermans, Titus Barik, Nachiappan Nagappan	
		PANEL	**PASS THE MIC: SUSTAINABILITY FROM AROUND THE GLOBE** Chairs: Birgit Penzenstadler	MIRROR SCHEDULE ONLY 08:55 – 09:40 LIVE EVENT
			Champika Ellawala, Chao Mbogo, Yuri Castro	

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Detailed Program: May 26th

TIME CEST LIVE	TIME CEST MIRROR	Wednesday, May 26th (1/13)
10:00 – 10:45	22:00 – 22:45	KEYNOTE — MICHAEL LYU: Chair: Tao Xie — 10:00 – 10:45 / 22:00 – 22:45 MIRROR →
		Reliability-Driven AIOps for Cloud Resilience Brief summary of the Keynote here
10:45 – 11:15	22:45 – 23:15	MEET WITH — MEET MICHAEL LYU — 10:45 – 11:15 / 22:45 – 23:15 MIRROR →
		Do you want to have the opportunity to meet and chat with the Keynotes and main Awardees from ICSE 2021? We are more than sure that after their interesting and inspired talks, you would have a lot of questions and comments for them, so join their corresponding sessions to get the chance of meeting and chatting with them
		NETWORKING — COFFEE CHAT — 10:45 – 11:15 / 22:45 – 23:15 LIVE EVENT →
		If we were meeting in person, there would be conversations around coffee tables in many different languages. To imitate this informal interaction we organise a series of chat room meetings in different languages. **Women in Software Engineering Research** **Hablamos español**
		NETWORKING — MENTORING CIRCLE Chair: Abhik Roychoudhury — 10:45 – 11:15 LIVE SCHEDULE ONLY →
		ICSE 2021 will run a series of mentoring circles each led by senior software engineering researcher. Every mentoring circle has limited capacity (up to 10 mentees). The conversation can touch on any subject, and address any challenge experienced by the mentees. This is a limited-capacity by registration only event.
		NETWORKING — YOGA AND BREATHWORKS Chair: Birgit Penzenstadler — 10:45 – 11:15 LIVE SCHEDULE ONLY →
		The yoga sessions are short introductory sessions to pranayama (working with the breath), asana (stretching), and meditation. No prior knowledge required - put on some comfy clothes and find a space to relax in.
		INVENIA LABS — OPPORTUNITIES AT INVENIA LABS — 10:45 – 11:15 LIVE SCHEDULE ONLY →
		A chance to network with members of the Invenia Labs team and ask questions about what Invenia is working on.
		FACEBOOK — MEET FACEBOOK RECRUITING & RESEARCH — MIRROR SCHEDULE ONLY 22:45 – 23:15 LIVE EVENT →
		Join Ph.D and Infrastructure recruiters to learn about the research and opportunities available at Facebook

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Wednesday, May 26th (2/13)

TIME CEST LIVE	TIME CEST MIRROR			
10:45 – 11:15	22:45 – 23:15	DEMOS	EVOLUTION 1 Chair: Giuseppe Scanniello	10:45 – 11:15 22:45 – 23:15 MIRROR

Each demo makes a 1-minute presentation (displayed in the Demonstration room). At the end of each presentation, a breakout room will be created for each demo. Attendees will be able to join and discuss with the authors.

DEMO	**MigrationAdvisor: Recommending Library Migrations from Large-Scale Open-Source Data** Hao He, Yulin Xu, Xiao Cheng, Guangtai Liang, Minghui Zhou	
DEMO	**AndroEvolve: Automated Update for Android Deprecated-API Usages** Stefanus Agus Haryono, Ferdian Thung, David Lo, Lingxiao Jiang, Julia Lawall, Hong Jin Kang, Lucas Serrano, Gilles Muller	
DEMO	**GraphGallery: A Platform for Fast Benchmarking and Easy Development of Graph Neural Networks Based Intelligent Software** Jintang Li, Kun Xu, Liang Chen, Zibin Zheng, Xiao Liu	
DEMO	**BLOCKEYE: Hunting For DeFi Attacks on Blockchain** Bin Wang, Han Liu, Chao Liu, Zhiqiang Yang, Qian Ren, Huixuan Zheng, Hong Lei	
DEMO	**APIScanner - Towards Automated Detection of Deprecated APIs in Python Libraries** Aparna Vadlamani, Rishitha Kalicheti, Sridhar Chimalakonda	

11:20 – 12:20	23:20 – 00:20	BLENDED SESSION	VULNERABILITIES IN ANDROID 1 Chair: Alessandra Gorla	11:20 – 12:20 23:20 – 00:20 MIRROR

Technical Track	**Fine with "1234"? An Analysis of SMS One-Time Password Randomness in Android Apps** Siqi Ma, Juanru Li, hyoungshick kim, Elisa Bertino, Surya Nepal, Diet Ostry, Cong Sun	11:20 – 11:40
Technical Track	**App's Auto-Login Function Security Testing via Android OS-Level Virtualization** Wenna Song, Jiang Ming, Lin Jiang, Han Yan, Yi Xiang, Yuan Chen, Jianming Fu, Guojun Peng	11:40 – 12:00
Technical Track	**ATVHunter: Reliable Version Detection of Third-Party Libraries for Vulnerability Identification in Android Apps** Xian Zhan, Lingling Fan, Sen Chen, Feng Wu, Tianming Liu, Xiapu Luo, Yang Liu ***Awarded paper:*** ACM SIGSOFT Distinguished Paper Award	12:00 – 12:20

		BLENDED SESSION	DEEP NEURAL NETWORKS: QUALITY ASSURANCE Chair: Gregorio Robles	11:20 – 12:20 23:20 – 00:20 MIRROR

Technical Track	**Graph-based Fuzz Testing for Deep Learning Inference Engines** Weisi Luo, Xiaoyue Run, Dong Chai, Jiang Wang, Chunrong Fang, Zhenyu Chen	11:20 – 11:40
Technical Track	**RobOT: Robustness-Oriented Testing for Deep Learning Systems** Jingyi Wang, Jialuo Chen, Youcheng Sun, Xingjun Ma, Dongxia Wang, Jun Sun, Peng Cheng	11:40 – 12:00
Technical Track	**Scalable Quantitative Verification For Deep Neural Networks** Teodora Baluta, Zheng Leong Chua, Kuldeep S. Meel, Prateek Saxena	12:00 – 12:20

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TIME CEST LIVE	TIME CEST MIRROR	Wednesday, May 26th (3/13)		
11:20 – 12:20	23:20 – 00:20	BLENDED SESSION	**MODEL CHECKING** Chair: Oscar Dieste	11:20 – 12:20 23:20 – 00:20 MIRROR →
		Journal First	**Adversarial Specification Mining** Hong Jin Kang, David Lo	11:20 – 11:40
		Technical Track	**Fast Parametric Model Checking through Model Fragmentation** Xinwei Fang, Radu Calinescu, Simos Gerasimou, Faisal Alhwikem	11:40 – 12:00
		Technical Track	**Trace-Checking CPS Properties: Bridging the Cyber-Physical Gap** Claudio Menghi, Enrico Viganò, Domenico Bianculli, Lionel Briand	12:00 – 12:20
		BLENDED SESSION	**TOOLS FOR THE PYTHON LANGUAGE** Chair: Igor Steinmacher	11:20 – 12:20 23:20 – 00:20 MIRROR →
		Technical Track	**Restoring Execution Environments of Jupyter Notebooks** Jiawei Wang, Li Li, Andreas Zeller	11:20 – 11:40
		Technical Track	**PyART: Python API Recommendation in Real-Time** Xincheng He, Lei Xu, Xiangyu Zhang, Rui Hao, Yang Feng, Baowen Xu	11:40 – 12:00
		Technical Track	**PyCG: Practical Call Graph Generation in Python** Vitalis Salis, Thodoris Sotiropoulos, Panos Louridas, Diomidis Spinellis, Dimitris Mitropoulos	12:00 – 12:20
		BLENDED SESSION	**CODE REVIEW: OBSERVATIONAL STUDIES** Chair: Sira Vegas	11:20 – 12:20 23:20 – 00:20 MIRROR →
		Journal First	**Review Dynamics and Their Impact on Software Quality** Patanamon Thongtanunam, Ahmed E. Hassan	11:20 – 11:40
		Journal First	**Code Reviews with Divergent Review Scores: An Empirical Study of the OpenStack and Qt Communities** Toshiki Hirao, Shane McIntosh, Akinori Ihara, Kenichi Matsumoto	11:40 – 12:00
		Journal First	**A Longitudinal Study of Static Analysis Warning Evolution and the Effects of PMD on Software Quality in Apache Open Source Projects** Alexander Trautsch, Steffen Herbold, Jens Grabowski	12:00 – 12:20
12:20 – 12:50	---	SOCIAL	**FLAMENCO LESSON & PARTY 1**	12:20 – 12:50 LIVE SCHEDULE ONLY →
		An online Flamenco class and party that will immerse you in the cultural experience of flamenco Read here to start preparing yourself for clapping and castanets (https://www.ishowusevilla.com/en).		

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TIME CEST LIVE	TIME CEST MIRROR	Wednesday, May 26th (4/13)		
12:55 – 13:55	00:55 – 01:55	BLENDED SESSION	MODULARIZATION AND REUSABILITY Chair: Maria Teresa Baldassarre	12:55 – 13:55 00:55 – 01:55 MIRROR →
		Technical Track	**CENTRIS: A Precise and Scalable Approach for Identifying Modified Open-Source Software Reuse** Seunghoon Woo, Sunghan Park, Seulbae Kim, Heejo Lee, Hakjoo Oh	12:55 – 13:15
		Technical Track	**Interpretation-enabled Software Reuse Detection Based on a Multi-Level Birthmark Model** Xi Xu, Qinghua Zheng, Zheng Yan, Ming Fan, Ang Jia, Ting Liu	13:15 – 13:35
		SEIP	**Search-Based Software Re-Modularization: A Case Study at Adyen** Casper Schröder, Adriaan van der Feltz, Annibale Panichella, Maurício Aniche	13:35 – 13:55
		BLENDED SESSION	CONFIGURATION OF SOFTWARE SYSTEMS: TESTING Chair: Antonia Bertolino	12:55 – 13:55 00:55 – 01:55 MIRROR →
		Technical Track	**An Evolutionary Study of Configuration Design and Implementation in Cloud Systems** Yuanliang Zhang, Haochen He, Owolabi Legunsen, Shanshan Li, Wei Dong, Tianyin Xu	12:55 – 13:15
		Technical Track	**AutoCCAG: An Automated Approach to Constrained Covering Array Generation** Chuan Luo, Jinkun Lin, Shaowei Cai, Xin Chen, Bing He, Bo Qiao, Pu Zhao, Qingwei Lin, Hongyu Zhang, Wei Wu, Saravanakumar Rajmohan, Dongmei Zhang	13:15 – 13:35
		SEIP	**ConfigFix: Interactive Configuration Conflict Resolution for the Linux Kernel** Patrick Franz, Thorsten Berger, Ibrahim Fayaz, Sarah Nadi, Evgeny Groshev	13:35 – 13:55
		BLENDED SESSION	GUI DESIGN Chair: Ignacio Panach	12:55 – 13:55 00:55 – 01:55 MIRROR →
		Journal First	**Wireframe-based UI Design Search through Image Autoencoder** Jieshan Chen, Chunyang Chen, Zhenchang Xing, Xin Xia, Liming Zhu, John Grundy, Jinshui Wang	12:55 – 13:15
		Technical Track	**GUIGAN: Learning to Generate GUI Designs Using Generative Adversarial Networks** Tianming Zhao, Chunyang Chen, Yuanning Liu, Xiaodong Zhu	13:15 – 13:35
		Technical Track	**Don't Do That! Hunting Down Visual Design Smells in Complex UIs against Design Guidelines** Bo Yang, Zhenchang Xing, Xin Xia, Chunyang Chen, Deheng Ye, Shanping Li	13:35 – 13:55

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Detailed Program: May 26th

TIME CEST LIVE	TIME CEST MIRROR	Wednesday, May 26th (5/13)		
12:55 – 13:55	00:55 – 01:55	BLENDED SESSION	**PROGRAMMING: GENERAL ISSUES** Chair: Gregorio Robles	12:55 – 13:55 00:55 – 01:55 MIRROR →
		Technical Track	**Efficient Compiler Autotuning via Bayesian Optimization** Junjie Chen, Ningxin Xu, Peiqi Chen, Hongyu Zhang	12:55 – 13:15
		Technical Track	**TransRegex: Multi-modal Regular Expression Synthesis by Generate-and-Repair** Yeting Li, Shuaimin Li, Zhiwu Xu, Jialun Cao, Zixuan Chen, Yun Hu, Haiming Chen, Shing-Chi Cheung	13:15 – 13:35
		Technical Track	**EvoSpex: An Evolutionary Algorithm for Learning Postconditions** Facundo Molina, Pablo Ponzio, Nazareno Aguirre, Marcelo F. Frias 	13:35 – 13:55
		BLENDED SESSION	**DEEP NEURAL NETWORKS: HACKING** Chair: Grace Lewis	12:55 – 13:55 00:55 – 01:55 MIRROR →
		SEIP	**Robustness of on-device Models: Adversarial Attack to Deep Learning Models on Android Apps** Yujin Huang, Han Hu, Chunyang Chen	12:55 – 13:15
		Technical Track	**DeepBackdoor: Black-box Backdoor Attack on Deep Learning Models through Neural Payload Injection** Yuanchun Li, Jiayi Hua, Haoyu Wang, Chunyang Chen, Yunxin Liu	13:15 – 13:35
		Technical Track	**Reducing DNN Properties to Enable Falsification with Adversarial Attacks** David Shriver, Sebastian Elbaum, Matthew B Dwyer 	13:35 – 13:55
		JSEET	**TEACHING SE IN REAL CONTEXTS** Chair: Ana María Moreno	12:55 – 13:55 00:55 – 01:55 MIRROR →
		JSEET	**Teaching the Scrum Master Role using Professional Agile Coaches and Communities of Practice** Maria Paasivaara	12:55 – 13:15
		JSEET	**Teaching Model-based Requirements Engineering to Industry Professionals: An Experience Report** Marian Daun, Jennifer Brings, Marcel Goger, Walter Koch and Thorsten Weyer ***Awarded paper:*** Best Paper - Joint Track for Software Engineering Education and Training (JSEET)	13:15 – 13:35
		JSEET	**Supporting Real Demands in Software Engineering with a Four Steps Project-Based Learning Approach** Leonardo Humberto Silva, Renata Xavier Castro and Marice Costa Guimaraes	13:35 – 13:55
		BREAK 35'		13:55 – 14:30 01:55 – 02:30 MIRROR

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TIME CEST LIVE	TIME CEST MIRROR	Wednesday, May 26th (6/13)		
14:30 – 15:30	02:30 – 03:30	BLENDED SESSION	**DEFECT PREDICTION: AUTOMATION 1** Chair: Carolyn Seaman	14:30 – 15:30 02:30 – 03:30 MIRROR →
		Technical Track	**Automatic Web Testing using Curiosity-Driven Reinforcement Learning** Yan Zheng, Yi Liu, Xiaofei Xie, Yepang Liu, Lei Ma, Jianye Hao, Yang Liu	14:30 – 14:50
		Technical Track	**Evaluating SZZ Implementations Through a Developer-informed Oracle** Giovanni Rosa, Luca Pascarella, Simone Scalabrino, Rosalia Tufano, Gabriele Bavota, Michele Lanza, Rocco Oliveto	14:50 – 15:10
		SEIP	**D2A: A Dataset Built for AI-Based Vulnerability Detection Methods Using Differential Analysis** Yunhui Zheng, Saurabh Pujar, Burn Lewis, Luca Buratti, Edward Epstein, Bo Yang, Jim A. Laredo, Alessandro Morari, Zhong Su	15:10 – 15:30
		BLENDED SESSION	**SELF-ADMITTED TECHNICAL DEBT** Chair: Mika Mäntylä	14:30 – 15:30 02:30 – 03:30 MIRROR →
		Journal First	**Wait For It: Identifying "On-Hold"Self-Admitted Technical Debt** Rungroj Maipradit, Christoph Treude, Hideaki Hata, Kenichi Matsumoto	14:30 – 14:50
		Journal First	**An Exploratory Study on the Introduction and Removal of Different Types of Technical Debt** Jiakun Liu, Qiao Huang, Xin Xia, Emad Shihab, David Lo, Shanping Li	14:50 – 15:10
		Journal First	**Identifying Self-Admitted Technical Debts with Jitterbug** Zhe Yu, Fahmid Morshed Fahid, Huy Tu, Tim Menzies	15:10 – 15:30
		BLENDED SESSION	**SOFTWARE LOG ANALYSIS** Chair: Silverio Martínez-Fernández	14:30 – 15:25 02:30 – 03:25 MIRROR →
		Technical Track	**Semi-supervised Log-based Anomaly Detection via Probabilistic Label Estimation** Lin Yang, Junjie Chen, Zan Wang, Weijing Wang, Jiajun Jiang, Xuyuan Dong, Wenbin Zhang	14:30 – 14:50
		Technical Track	**DeepLV: Suggesting Log Levels Using Ordinal Based Neural Networks** Zhenhao Li, Heng Li, Tse-Hsun (Peter) Chen, Weiyi Shang	14:50 – 15:10
		NIER	**On Automatic Parsing of Log Records** Jared Rand, Andriy Miranskyy	15:10 – 15:25

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Wednesday, May 26th (7/13)

TIME CEST LIVE	TIME CEST MIRROR			
14:30 – 15:30	02:30 – 03:30	BLENDED SESSION	**SMART CONTRACTS** Chair: Oscar Pastor	14:30 – 15:30 02:30 – 03:30 MIRROR
		Journal First	**Defining Smart Contract Defects on Ethereum** Jiachi Chen, Xin Xia, David Lo, John Grundy, Xiapu Luo, Ting Chen	14:30 – 14:50
		Technical Track	**Smart Contract Security: a Practitioners' Perspective** Zhiyuan Wan, Xin Xia, David Lo, Jiachi Chen, Xiapu Luo, Xiaohu Yang	14:50 – 15:10
		Journal First	**An exploratory study of smart contracts in the Ethereum blockchain platform** Gustavo Ansaldi Oliva, Ahmed E. Hassan, Zhen Ming (Jack) Jiang	15:10 – 15:30
		BLENDED SESSION	**HANDLING ECOSYSTEMS OF FORKED PROJECTS** Chair: Claudia Ayala	14:30 – 15:25 02:30 – 03:25 MIRROR
		Technical Track	**Same File, Different Changes: The Potential of Meta-Maintenance on GitHub** Hideaki Hata, Raula Gaikovina Kula, Takashi Ishio, Christoph Treude	14:30 – 14:50
		NIER	**Semi-Automated Test-Case Propagation in Fork Ecosystems** Mukelabai Mukelabai, Thorsten Berger, Paulo Borba	14:50 – 15:05
		Technical Track	**Can Program Synthesis be Used to Learn Merge Conflict Resolutions? An Empirical Analysis** Rangeet Pan, Vu Le, Nachiappan Nagappan, Sumit Gulwani, Shuvendu Lahiri, Mike Kaufman	15:05 – 15:25
14:30 – 16:45	02:30 – 04:45	TECHNICAL BRIEFING	**REACTIVE SYNTHESIS WITH SPECTRA: A TUTORIAL** Chair: Xavier Franch	14:30 – 16:45 02:30 – 04:45 MIRROR
			Reactive Synthesys with Spectra: A Tutorial Shahar Maoz, Jan Oliver Ringert	
15:30 – 16:00	03:30 – 04:00	NETWORKING	**MEET YOUR PEERS**	15:30 – 16:00 03:30 – 04:00 LIVE EVENT
			In this series of speed networking events, ICSE participants can meet their academic peers **Postdoctoral researchers** **PhD students** **Faculty**	
		NETWORKING	**AST INDUSTRIAL COMPETITION**	15:30 – 16:00 LIVE SCHEDULE ONLY
			This year the theme for AST is "Automatic Software Testing from the Trenches". In other to visualize the industrial orientation of the congress, an "industrial competition" for participants of AST 2021 will be organized. The idea is to give a very short presentation of accepted papers in AST to an industrial commission (only 3 to 5 minutes per author!) and they will select a winner analyzing its attractiveness to the industry.	

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Wednesday, May 26th (8/13)

TIME CEST LIVE	TIME CEST MIRROR			
15:30 – 16:00	03:30 – 04:00	NETWORKING	MENTORING CIRCLE Chair: Jonathan Bell *(LIVE SCHEDULE)*, Gail Murphy *(MIRROR SCHEDULE)*	15:30 – 16:00 03:30 – 04:00 LIVE EVENT
		ICSE 2021 will run a series of mentoring circles each led by senior software engineering researcher. Every mentoring circle has limited capacity (up to 10 mentees). The conversation can touch on any subject, and address any challenge experienced by the mentees. This is a limited-capacity by registration only event.		
		HUAWEI	SE RESEARCH @ HUAWEI	MIRROR SCHEDULE ONLY 03:30 – 04:00 LIVE EVENT
		Meeting SE Researchers at Huawei		
16:05 – 17:05	04:05 – 05:05	BLENDED SESSION	FUZZING Chair: Hakan Erdogmus	16:05 – 17:05 04:05 – 05:05 MIRROR
		Technical Track	**Input Algebras** Rahul Gopinath, Hamed Nemati, Andreas Zeller	16:05 – 16:25
		Technical Track	**Fuzzing Symbolic Expressions** Luca Borzacchiello, Emilio Coppa, Camil Demetrescu	16:25 – 16:45
		Technical Track	**Growing A Test Corpus with Bonsai Fuzzing** Vasudev Vikram, Rohan Padhye, Koushik Sen	16:45 – 17:05
		BLENDED SESSION	API: EVOLUTION AND MAINTENANCE 1 Chair: Davide Falessi	16:05 – 17:05 04:05 – 05:05 MIRROR
		Technical Track	**Semantic Patches for Adaptation of JavaScript Programs to Evolving Libraries** Benjamin Barslev Nielsen, Martin Toldam Torp, Anders Møller	16:05 – 16:25
		Journal First	**An Empirical Study of Dependency Downgrades in the npm Ecosystem** Filipe R. Cogo, Gustavo Ansaldi Oliva, Ahmed E. Hassan	16:25 – 16:45
		Journal First	**A3: Assisting Android API Migrations Using Code Examples** Maxime Lamothe, Weiyi Shang, Tse-Hsun (Peter) Chen	16:45 – 17:05
		BLENDED SESSION	OBSERVATIONAL STUDIES: DIFFERENT DOMAINS Chair: Daniela Damian	16:05 – 17:00 04:05 – 05:00 MIRROR
		NIER	**Two Elements of Pair Programming Skill** Franz Zieris, Lutz Prechelt	16:05 – 16:20
		Journal First	**The best laid plans or lack thereof: Security decision-making of different stakeholder groups** Benjamin Shreeve, Joseph Hallett, Matthew Edwards, Kopo M. Ramokapane, Richard Atkins, Awais Rashid	16:20 – 16:40
		SEIP	**On the Lack of Consensus Among Technical Debt Detection Tools** Jason Lefever, Yuanfang Cai, Humberto Cervantes, Rick Kazman, Hongzhou Fang	16:40 – 17:00

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TIME CEST LIVE	TIME CEST MIRROR	Wednesday, May 26th (9/13)			
16:05 – 17:00	04:05 – 05:00	BLENDED SESSION	MODELS AND DSLS Chair: Joanne M. Atlee	16:05 – 17:00 04:05 – 05:00 MIRROR	→
		Journal First	**Efficient execution of ATL model transformations using static analysis and parallelism** Jesús Sánchez Cuadrado, Loli Burgueño, Manuel Wimmer, Antonio Vallecillo	16:05 – 16:25	
		NIER	**Towards Domain-Specific Modelling Environments based on Augmented Reality** Léa Brunschwig, Rubén Campos-López, Esther Guerra, Juan de Lara	16:25 – 16:40	
		Journal First	**Execution of Partial State Machine Models** Mojtaba Bagherzadeh, Nafiseh Kahani, Karim Jahed, Juergen Dingel	16:40 – 17:00	
		BREAK 15’		17:05 – 17:20 05:05 – 05:20 MIRROR	
17:20 – 18:15	05:20 – 06:15	AWARDS	Other ACM SIGSOFT Awards Chair: Thomas Zimmermann	17:20 – 17:30 05:20 – 05:30 MIRROR	→
		KEYNOTE	ELAINE WEYUKER: Chair: Oscar Dieste	17:30 – 18:15 05:30 – 06:15 MIRROR	→
		The View From 40 Years in the Research Trenches - From Academia to Industry and Back Again Brief summary of the Keynote here			
18:00 – 21:05	---	INDUSTRY CASE STUDIES	SPANISH INDUSTRY CASE STUDIES Chairs: Andrés-Leonardo Martínez-Ortiz, Aurora Barrero López	18:00 – 21:10 LIVE SCHEDULE ONLY	→
		Opening	Aurora Barrero López, Andrés-Leonardo Martínez-Ortiz	18:00 – 18:10	
		Talk	**Contributions to an open source project: Igalia and the Chromium project** Mario Sánchez - PradaIgalia, S.L.	18:10 – 18:35	
		Talk	**From counting potatos to help organizations understand open source software engineering** José Manrique López de la Fuente - Bitergia	18:35 – 19:00	
		Talk	**Challenges of building a Telco in the cloud** Pablo Moncada	19:00 – 19:25	
		Talk	**Cybersecurity and Interoperability for IoT constrained networks in Smart Agriculture** Rafael Marín Pérez	19:25 – 19:50	
		Talk	**How Me2B can improve your search and discovery experience** Pieter Vegt	19:50 – 20:15	
		Talk	**Developing infrastructure with Software Engineering principles** Javier Provecho - Telefonica	20:15 – 20:40	
		Talk	**Managing scalability in a spatiotemporal data environament** Miguel Ángel Corella Montoya	20:40 – 21:05	
		Closing	Aurora Barrero López, Andrés-Leonardo Martínez-Ortiz	21:05 – 21:10	

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TIME CEST LIVE	TIME CEST MIRROR	Wednesday, May 26th (10/13)

MEET WITH — MEET ELAINE WEYUKER — 18:15 – 18:45 / 06:15 – 06:45 MIRROR

Do you want to have the opportunity to meet and chat with the Keynotes and main Awardees from ICSE 2021? We are more than sure that after their interesting and inspired talks, you would have a lot of questions and comments for them, so join their corresponding sessions to get the chance of meeting and chatting with them

NETWORKING — COFFEE CHAT — 18:15 – 18:45 / 06:15 – 06:45 LIVE EVENT

If we were meeting in person, there would be conversations around coffee tables in many different languages. To imitate this informal interaction we organise a series of chat room meetings in different languages.

Women in Software Engineering Research

Hablamos español

Blacks in Software Engineering

NETWORKING — WAIN'21 – 1st WORKSHOP ON AI ENGINEERING – SOFTWARE ENGINEERING FOR AI — Chair: Ivica Crnkovic — 18:15 – 18:45 LIVE SCHEDULE ONLY

WAIN'21 has brought researchers and practitioners in software engineering, data-science, and AI, to build up a community which is targeting new challenges emerging in software engineering – how to efficiently build software AI-enabled software systems.

NETWORKING — YOU MIGHT BE STUDYING TECHNICAL DEBT AND NOT KNOW IT — Chair: Antonio Martini — 18:15 – 18:45 LIVE SCHEDULE ONLY

NETWORKING — MENTORING CIRCLE — Chair: Tao Xie — MIRROR SCHEDULE ONLY / 06:15 – 06:45 LIVE EVENT

ICSE 2021 will run a series of mentoring circles each led by senior software engineering researcher. Every mentoring circle has limited capacity (up to 10 mentees). The conversation can touch on any subject, and address any challenge experienced by the mentees. This is a limited-capacity by registration only event.

FACEBOOK — FACEBOOK LAUNCHES NEW RESEARCH AWARD OPPORTUNITY — 18:15 – 18:45 LIVE SCHEDULE ONLY

Join us for the launch of a research award opportunity for academia at ICSE! This request for proposals continues the research that the probability team at Facebook, led by Mark Harman, is doing to foster innovation in agent-based user interaction simulation.

DEMOS — VERIFICATION — Chair: Francisco Servant — 18:15 – 18:45 / 06:15 – 06:45 MIRROR

Each demo makes a 1-minute presentation (displayed in the Demonstration room). At the end of each presentation, a breakout room will be created for each demo. Attendees will be able to join and discuss with the authors.

DEMO	**Metrinome: Path Complexity Predicts Symbolic Execution Path Explosion** Gabriel Bessler, Josh Cordova, Shaheen Cullen-Baratloo, Sofiane Dissem, Emily Lu, Ibrahim Abugharath, Sofia Devin, Lucas Bang
DEMO	**Roosterize: Suggesting Lemma Names for Coq Verification Projects Using Deep Learning** Pengyu Nie, Karl Palmskog, Junyi Jessy Li, Milos Gligoric
DEMO	**NEUROSPF: A Tool For the Symbolic Analysis of Neural Networks** Muhammad Usman, Yannic Noller, Corina S. Pasareanu, Youcheng Sun, Divya Gopinath

18:15 – 18:45 / 06:15 – 06:45

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Wednesday, May 26th (11/13)

TIME CEST — LIVE: 18:50 – 19:50 | MIRROR: 06:50 – 07:50

BLENDED SESSION — TESTING: AUTOMATIC TEST GENERATION
Chair: José Miguel Rojas
18:50 – 19:50 (06:50 – 07:50 MIRROR)

Journal First	**Inputs from Hell: Learning Input Distributions for Grammar-Based Test Generation** Ezekiel Soremekun, Esteban Pavese, Nikolas Havrikov, Lars Grunske, Andreas Zeller	18:50 – 19:10
Technical Track	**Automatic Unit Test Generation for Machine Learning Libraries: How Far Are We?** Song Wang, Nishtha Shrestha, Abarna Kucheri Subburaman, Junjie Wang, Moshi Wei, Nachiappan Nagappan	19:10 – 19:30
Journal First	**Using Relative Lines of Code to Guide Automated Test Generation for Python** Josie Holmes, Iftekhar Ahmed, Caius Brindescu, Rahul Gopinath, He Zhang, Alex Groce	19:30 – 19:50

BLENDED SESSION — DEVELOPERS: EXPERIMENTS
Chair: Sira Vegas
18:50 – 19:50 (06:50 – 07:50 MIRROR)

Technical Track	**The Mind Is a Powerful Place: How Showing Code Comprehensibility Metrics Influences Code Understanding** Marvin Wyrich, Andreas Preikschat, Daniel Graziotin, Stefan Wagner	18:50 – 19:10
Technical Track	**Program Comprehension and Code Complexity Metrics: An fMRI Study** Norman Peitek, Sven Apel, Chris Parnin, André Brechmann, Janet Siegmund ***Awarded paper:*** ACM SIGSOFT Distinguished Paper Award	19:10 – 19:30
Journal First	**Comparing Block-based Programming Models for Two-armed Robots** Nico Ritschel, Vladimir Kovalenko, Reid Holmes, Ronald Garcia, David C. Shepherd	19:30 – 19:50

BLENDED SESSION — CODE COMPLETION
Chair: Marsha Chechik
18:50 – 19:50 (06:50 – 07:50 MIRROR)

Technical Track	**Siri, Write the Next Method** Fengcai Wen, Emad Aghajani, Csaba Nagy, Michele Lanza, Gabriele Bavota	18:50 – 19:10
Technical Track	**Code Prediction by Feeding Trees to Transformers** Seohyun Kim, Jinman Zhao, Yuchi Tian, Satish Chandra	19:10 – 19:30
SEIP	**Learning Autocompletion from Real-World Datasets** Gareth Aye, Seohyun Kim, Hongyu Li	19:30 – 19:50

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TIME CEST LIVE	TIME CEST MIRROR	Wednesday, May 26th (12/13)		
18:50 – 19:50	06:50 – 07:50	BLENDED SESSION	SOME BIG COMPANIES' PRACTICES: CASES AT FACEBOOK, GOOGLE & IBM Chair: Davide Falesi	18:50 – 19:50 06:50 – 07:50 MIRROR →
		SEIP	**Testing Web Enabled Simulation at Scale Using Metamorphic Testing** Mark Harman, John Ahlgren, Maria Eugenia Berezin, Elena Dulskyte, Inna Dvortsova, Johann George, Natalija Gucevska, Erik Meijer, Justin Spahr-Summers, Kinga Bojarczuk, Silvia Sapora, Maria Lomeli	18:50 – 19:10
		SEIP	**Anomaly Detection in a Large-scale Cloud Platform** Mohammad Saiful Islam, William Pourmajidi, Lei Zhang, John Steinbacher, Tony Erwin, Andriy Miranskyy	19:10 – 19:30
		SEIP	**Smart Build Targets Batching Service at Google** Kaiyuan Wang, Daniel Rall, Greg Tener, Vijay Gullapalli, Xin Huang, Ahmed Gad	19:30 – 19:50
19:50 – 20:35	07:50 – 08:35	PANEL	WHAT IS A NIER PAPER IN SOFTWARE ENGINEERING? Chairs: Patricia Lago, Gail Murphy	19:50 – 20:35 07:50 – 08:35 MIRROR →
			Ivica Crnkovic, Paris Avgeriou, Liliana Pasquale, Antonia Bertolino	
20:40 – 21:40	08:40 – 09:40	BLENDED SESSION	SOCIAL EQUALITY AND FAIRNESS 1 Chair: Joanne M. Atlee	20:40 – 21:40 08:40 – 09:40 MIRROR →
		SEIP	**Evolving Software to be ML-Driven Utilizing Real-World A/B Testing: Experiences, Insights, Challenges** Paul Luo Li, Xiaoyu Chai, Frederick Campbell, Jilong Liao, Neeraja Abburu, Minsuk Kang, Irina Niculescu, Greg Brake, Siddharth Patel, James Dooley, Brandon Paddock	20:40 – 21:00
		Technical Track	**AID: An Automated Inclusivity-Bug Detector** Amreeta Chatterjee, Mariam Guizani, Catherine Stevens, Jillian Emard, Mary Evelyn May, Margaret Burnett, Iftekhar Ahmed, Anita Sarma	21:00 – 21:20
		SEIP	**Towards Inclusive Software Engineering Through A/B Testing: A Case-Study at Windows** Irina Niculescu, Huibin Mary Hu, Christina Gee, Chewy Chong, Shivam Dubey, Paul Luo Li	21:20 – 21:40
		BLENDED SESSION	Q&A IN ONLINE PLATFORMS: STACK OVERFLOW 1 Chair: Francisco Servant	20:40 – 21:40 08:40 – 09:40 MIRROR →
		Journal First	**Reading Answers on Stack Overflow: Not Enough!** Haoxiang Zhang, Shaowei Wang, Tse-Hsun (Peter) Chen, Ahmed E. Hassan	20:40 – 21:00
		Journal First	**An Empirical Study of Developer Discussions in the Gitter Platform** Osama Ehsan, Safwat Hassan, Mariam El Mezouar, Ying Zou	21:00 – 21:20
		Technical Track	**Automatic Extraction of Opinion-based Q&A from Online Developer Chats** Preetha Chatterjee, Kostadin Damevski, Lori Pollock	21:20 – 21:40

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Detailed Program: May 26th

TIME CEST LIVE	TIME CEST MIRROR	Wednesday, May 26th (13/13)		
20:40 – 21:40	08:40 – 09:40	BLENDED SESSION	DEFECT PREDICTION: DATA ISSUES AND BUG CLASSIFICATION Chair: Federica Sarro	20:40 – 21:40 08:40 – 09:40 MIRROR →
		Technical Track	**Early Life Cycle Software Defect Prediction. Why? How?** Shrikanth N C, Suvodeep Majumder, Tim Menzies	20:40 – 21:00
		Journal First	**On the Time-Based Conclusion Stability of Cross-Project Defect Prediction Models** Abdul Ali Bangash, Hareem Sahar, Abram Hindle, Karim Ali	21:00 – 21:20
		Technical Track	**IoT Bugs and Development Challenges** Amir Makhshari, Ali Mesbah 	21:20 – 21:40
		BLENDED SESSION	FAULT LOCALIZATION 1 Chair: Leonardo Mariani	20:40 – 21:40 08:40 – 09:40 MIRROR →
		SEIP	**Industry-scale IR-based Bug Localization: A Perspective from Facebook** Vijayaraghavan Murali, Lee Gross, Rebecca Qian, Satish Chandra ***Awarded paper:*** IEEE Software Distinguished Paper Award - Software Engineering in Practice	20:40 – 21:00
		Technical Track	**FLACK: Counterexample-Guided Fault Localization for Alloy Models** Guolong Zheng, ThanhVu Nguyen, Simón Gutiérrez Brida, Germán Regis, Marcelo F. Frias, Nazareno Aguirre, Hamid Bagheri 	21:00 – 21:20
		Technical Track	**Improving Fault Localization by Integrating Value and Predicate Based Causal Inference Techniques** Yigit Kucuk, Tim A. D. Henderson, Andy Podgurski ***Awarded paper:*** ACM SIGSOFT Distinguished Paper Award	21:20 – 21:40
		JSEET	INSTITUTIONAL STRATEGIES TO SE EDUCATION I Chair: Hakan Erdogmus	20:40 – 21:40 08:40 – 09:40 MIRROR →
		JSEET	**Structuring a Comprehensive Software Security Course Around the OWASP Application Security Verification Standard** Sarah Elder, Nusrat Zahan, Val Kozarev, Tim Menzies, Rui Shu and Laurie Williams	20:40 – 21:00
		JSEET	**Exponential Competence of Computer Science and Software Engineering Undergraduate Students** Orit Hazzan	21:00 – 21:20
		JSEET	**"Is My Mic On?" Preparing SE Students for Collaborative Remote Work and Hybrid Team Communication** Makayla Moster, Denae Ford and Paige Rodeghero	21:20 – 21:40

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Detailed Program: May 27th

TIME CEST LIVE	TIME CEST MIRROR	Thursday, May 27th (1/14)		
10:00 – 11:00	22:00 – 23:00	BLENDED SESSION	SOCIAL EQUALITY AND FAIRNESS 2 Chair: Alexander Serebrenik	10:00 – 10:55 22:00 – 22:55 MIRROR →
		SEIS	**A First Look at Human Values-Violation in App Reviews** Humphrey Obie, Waqar Hussain, Xin Xia, John Grundy, Li Li, Burak Turhan, Jon Whittle, Mojtaba Shahin	10:00 – 10:15
		Technical Track	**Ignorance and Prejudice in Software Fairness** Jie M. Zhang, Mark Harman	10:15 – 10:35
		Journal First	**Gender Differences in Personality Traits of Software Engineers** Daniel Russo, Klaas-Jan Stol	10:35 – 10:55
		BLENDED SESSION	DEEP NEURAL NETWORKS: SUPPORTING SE TASKS 2 Chair: Sira Vegas	10:00 – 11:00 22:00 – 23:00 MIRROR →
		SEIP	**NNStreamer: Efficient and Agile Development of On-Device AI Systems** MyungJoo Ham, Jijoong Moon, Geunsik Lim, Jaeyun Jung, Hyoungjoo Ahn, Wook Song, Sangjung Woo, Parichay Kapoor, Dongju Chae, Gichan Jang, Yongjoo Ahn, Jihoon Lee	10:00 – 10:20
		Journal First	**Deep Learning Based Program Generation from Requirements Text: Are We There Yet?** Hui Liu, Mingzhu Shen, Jiaqi Zhu, Nan Niu, Ge Li, Lu Zhang	10:20 – 10:40
		Technical Track	**Studying the Usage of Text-To-Text Transfer Transformer to Support Code-Related Tasks** Antonio Mastropaolo, Simone Scalabrino, Nathan Cooper, David Nader Palacio, Denys Poshyvanyk, Rocco Oliveto, Gabriele Bavota	10:40 – 11:00
		BLENDED SESSION	DEFECT PREDICTION: AUTOMATION 2 Chair: Robert Feldt	10:00 – 11:00 22:00 – 23:00 MIRROR →
		Journal First	**Revisiting Supervised and Unsupervised Methods for Effort-Aware Cross-Project Defect Prediction** Chao Ni, Xin Xia, David Lo, Xiang Chen, Qing Gu	10:00 – 10:20
		Journal First	**Ammonia: an Approach for Deriving Project-Specific Bug Patterns** Yoshiki Higo, Shinpei Hayashi, Hideaki Hata, Mei Nagappan	10:20 – 10:40
		Journal First	**Predicting Defective Lines Using a Model-Agnostic Technique** Supatsara Wattanakriengkrai, Patanamon Thongtanunam, Chakkrit Tantithamthavorn, Hideaki Hata, Kenichi Matsumoto	10:40 – 11:00

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Detailed Program: May 27th

TIME CEST LIVE	TIME CEST MIRROR	Thursday, May 27th (2/14)		
10:00 – 11:00	22:00 – 23:00	BLENDED SESSION	VULNERABILITIES IN ANDROID 2 Chair: Ignacio Panach	10:00 – 11:00 22:00 – 23:00 MIRROR
		Technical Track	**JUSTGen: Effective Test Generation for Unspecified JNI Behaviors on JVMs** Sungjae Hwang, Sungho Lee, Jihoon Kim, Sukyoung Ryu	10:00 – 10:20
		Journal First	**Why an Android App is Classified as Malware? Towards Malware Classification Interpretation** Bozhi Wu, Sen Chen, Cuiyun Gao, Lingling Fan, Yang Liu, Weiping Wen, Michael Lyu	10:20 – 10:40
		Journal First	**Security Analysis of Permission Re-delegation Vulnerabilities in Android Apps** Biniam Fisseha Demissie, Mariano Ceccato, Lwin Khin Shar	10:40 – 11:00
		JSEET	STUDENT ASSESSMENT I Chair: Ana María Moreno	10:00 – 11:00 22:00 – 23:00 MIRROR
		JSEET	**Effectiveness of Peer Review in Teaching and Learning User Centered Conceptual Design Among Large Cohorts of Information Technology Students** Farshid Anvari, Hien Minh Thi Tran and Deborah Richards	10:00 – 10:20
		JSEET	**Reforming Assessment: Challenges Beyond Design** Laura Tubino, Jean-Guy Schneider, Andrew Cain, Dhananjay Thiruvady and Chathu Ranaweera	10:20 – 10:40
		JSEET	**Gradeer: An Open-Source Modular Hybrid Grader** Benjamin Clegg, Maria-Cruz Villa-Uriol, Phil McMinn and Gordon Fraser	10:40 – 11:00
10:00 – 11:15	22:00 – 23:15	TECHNICAL BRIEFING	DECODING GROUNDED THEORY FOR SOFTWARE ENGINEERING Chair: Xavier Franch	10:00 – 11:15 22:00 – 23:15 MIRROR
			Decoding Grounded Theory for Software Engineering Rashina Hoda	
11:00 – 11:45	23:00 – 23:45	PANEL	ARE ACADEMICS WORKING ON THE RIGHT PROBLEMS?* Chairs: David C. Shepherd, Davide Falessi	11:00 – 11:45 LIVE SCHEDULE ONLY
			Felienne Hermans, Titus Barik, Nachiappan Nagappan ** Mirror event of Panel given in May 25th*	
		PANEL	DIVERSITY & INCLUSION PANEL Chairs: Emerson Murphy-Hill, Margaret-Anne Storey, Yu Huang	MIRROR SCHEDULE ONLY 23:00 – 23:45 MIRROR
			Brittany Johnson, Alannah Oleson, Alexander Serebrenik, Stephanie Forrest	
11:00 – 11:30	---	NETWORKING	TAKE A COFFEE WITH THE PROGRAM CO-CHAIRS OF ICSE 2021	11:00 – 11:45 LIVE SCHEDULE ONLY
		Are you interested on the tasks done by the ICSE Organizing Committee? Do you want to ask questions, discuss different points of view or share ideas regarding different tasks associated to the ICSE Organizing Committee roles in a relaxed environment? Come and take a coffee with some of the OC members!		

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Detailed Program: May 27th

TIME CEST LIVE	TIME CEST MIRROR	Thursday, May 27th (3/14)		
11:50 – 13:10	23:50 – 01:10	BLENDED SESSION	PROGRAMMING: CODE ANALYSIS ALGORITHMS Chair: Giuseppe Scanniello	11:50 – 13:10 23:50 – 01:10 MIRROR →
		Technical Track	**A Differential Testing Approach for Evaluating Abstract Syntax Tree Mapping Algorithms** Yuanrui Fan, Xin Xia, David Lo, Ahmed E. Hassan, Yuan Wang, Shanping Li	11:50 – 12:10
		Technical Track	**InferCode: Self-Supervised Learning of Code Representations by Predicting Subtrees** Nghi D. Q. Bui, Yijun Yu, Lingxiao Jiang	12:10 – 12:30
		Journal First	**Modular Tree Network for Source Code Representation Learning** Wenhan Wang, Ge Li, Sijie Shen, Xin Xia, Zhi Jin	12:30 – 12:50
		SEIP	**Case Study on Data-driven Deployment of Program Analysis on an Open Tools Stack** Anton Ljungberg, David Åkerman, Emma Söderberg, Gustaf Lundh, Jon Sten, Luke Church	12:50 – 13:10
		BLENDED SESSION	Q&A IN ONLINE PLATFORMS: STACK OVERFLOW 2 Chair: Alexander Serebrenik	11:50 – 13:10 23:50 – 01:10 MIRROR →
		Journal First	**Technical Q&A Site Answer Recommendation via Question Boosting** Zhipeng Gao, Xin Xia, David Lo, John Grundy	11:50 – 12:10
		Technical Track	**Automated Query Reformulation for Efficient Search Based on Query Logs from Stack Overflow** Kaibo Cao, Chunyang Chen, Sebastian Baltes, Christoph Treude, Xiang Chen ***Awarded paper:*** ACM SIGSOFT Distinguished Paper Award	12:10 – 12:30
		Technical Track	**Automatic Solution Summarization for Crash Bugs** Haoye Wang, Xin Xia, David Lo, John Grundy, Xinyu Wang	12:30 – 12:50
		Journal First	**Chatbot4QR: Interactive Query Refinement for Technical Question Retrieval** Neng Zhang, Qiao Huang, Xin Xia, Ying Zou, David Lo, Zhenchang Xing	12:50 – 13:10
		BLENDED SESSION	DEFECT PREDICTION: BUG CHARACTERIZATION & ANALYSIS Chair: Robert Feldt	11:50 – 13:05 23:50 – 01:05 MIRROR →
		Journal First	**Watch out for Extrinsic Bugs! A Case Study of their Impact in Just-In-Time Bug Prediction Models on the OpenStack project** Gema Rodríguez-Pérez, Mei Nagappan, Gregorio Robles	11:50 – 12:10
		Journal First	**An Empirical Study of Model-Agnostic Techniques for Defect Prediction Models** Jirayus Jiarpakdee, Chakkrit Tantithamthavorn, Hoa Khanh Dam, John Grundy	12:10 – 12:30
		Journal First	**On the cost and profit of software defect prediction** Steffen Herbold	12:30 – 12:50
		NIER	**Software Ticks Need No Specifications** Christoph Reichenbach	12:50 – 13:05

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Detailed Program: May 27th

Thursday, May 27th (4/14)

TIME CEST LIVE	TIME CEST MIRROR			
11:50 – 13:05	23:50 – 01:05	BLENDED SESSION	**MUTATION TESTING: GENERAL ISSUES** Chairs: Sigrid Eldh	11:50 – 13:05 23:50 – 01:05 MIRROR →
		Journal First	**Sentinel: A Hyper-Heuristic for the Generation of Mutant Reduction Strategies** Giovani Guizzo, Federica Sarro, Jens Krinke, Silvia Regina Vergilio	11:50 – 12:10
		NIER	**What Are We Really Testing in Mutation Testing for Machine Learning? A Critical Reflection** Annibale Panichella, Cynthia C. S. Liem	12:10 – 12:25
		Technical Track	**MuDelta: Delta-Oriented Mutation Testing at Commit Time** Wei Ma, Thierry Titcheu Chekam, Mike Papadakis, Mark Harman	12:25 – 12:45
		Technical Track	**Does mutation testing improve testing practices?** Goran Petrović, Marko Ivanković, Gordon Fraser, René Just	12:45 – 13:05
		JSEET	**STUDENT ASSESSMENT II** Chair: Ana María Moreno	11:50 – 12:50 23:50 – 00:50 MIRROR →
		JSEET	**Grading 600+ students: A Case Study on Peer and Self Grading** Maurício Aniche, Frank Mulder and Felienne Hermans	11:50 – 12:10
		JSEET	**Enhancing the Learning of Database Access Programming using Continuous Integration and Aspect Oriented Programming** Beatriz Pérez	12:10 – 12:30
		JSEET	**Mutation testing and self/peer assessment: analyzing their effect on students in a software testing course** Pedro Delgado-Pérez, Inmaculada Medina-Bulo, Miguel Ángel Álvarez-García and Kevin J. Valle-Gómez	12:30 – 12:50
			BREAK 25'	13:10 – 13:35 01:10 – 01:35 MIRROR
13:35 – 14:30	01:35 – 02:30	AWARDS	**ICSE 2011 MOST INFLUENTIAL PAPER AWARD** Chairs: Harald Gall, Nenad Medvidović	13:35 – 13:45 01:35 – 01:45 MIRROR →
		AWARD LECTURE	**LIONEL BRIAND, ANDREA ARCURI**	13:45 – 14:30 01:45 – 02:30 MIRROR →
			A Practical Guide for Using Statistical Tests to Assess Randomized Algorithms in Software Engineering	
14:30 – 15:00	02:30 – 03:00	MEET WITH	**MEET ANDREA ARCURI, LIONEL BRIAND**	14:30 – 15:00 02:30 – 03:00 MIRROR →
			Do you want to have the opportunity to meet and chat with the Keynotes and main Awardees from ICSE 2021? We are more than sure that after their interesting and inspired talks, you would have a lot of questions and comments for them, so join their corresponding sessions to get the chance of meeting and chatting with them	

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Detailed Program: May 27th

TIME CEST		Thursday, May 27th (5/14)
LIVE	MIRROR	

14:30 – 15:00 LIVE / 02:30 – 03:00 MIRROR

NETWORKING — COFFEE CHAT — 14:30 – 15:00 (02:30 – 03:00 LIVE EVENT)

If we were meeting in person, there would be conversations around coffee tables in many different languages. To imitate this informal interaction we organise a series of chat room meetings in different languages.

Women in Software Engineering Research

Hablamos español

NETWORKING — MENTORING CIRCLE — 14:30 – 15:00 LIVE SCHEDULE ONLY

Chair: Patricia Lago

ICSE 2021 will run a series of mentoring circles each led by senior software engineering researcher. Every mentoring circle has limited capacity (up to 10 mentees). The conversation can touch on any subject, and address any challenge experienced by the mentees. This is a limited-capacity by registration only event.

NETWORKING — EUROPE NEEDS STRONG SOFTWARE RESEARCH — 14:30 – 15:00 LIVE SCHEDULE ONLY

Chair: Alexander Serebrenik

Software Engineering research is under-funded and many of us need to apply to programs targeting other topics such as cybersecurity, AI and blockchain. Joins us in requesting international and national funding agencies to acknowledge the importance of software for society and the need for increased funding of software research.

Alexander Serebrenik, Paris Avgeriou, Jurgen Vinju, Marieke Huisman

INVENIA — OPPORTUNITIES AT INVENIA LABS — 14:30 – 15:00 LIVE SCHEDULE ONLY

A chance to network with members of the Invenia Labs team and ask questions about what Invenia is working on.

HUAWEI — SE RESEARCH @ HUAWEI — MIRROR SCHEDULE ONLY (02:30 – 03:00 LIVE EVENT)

Meeting SE Researchers at Huawei

DEMOS — EVOLUTION 2 — 14:30 – 15:00 (02:30 – 03:00 MIRROR)

Chair: Giuseppe Scanniello

Each demo makes a 1-minute presentation (displayed in the Demonstration room). At the end of each presentation, a breakout room will be created for each demo. Attendees will be able to join and discuss with the authors.

DEMO	**The Software Heritage Filesystem (SwhFS): Integrating Source Code Archival with Development** Thibault Allançon, Antoine Pietri, Stefano Zacchiroli
DEMO	**Guiding engineers with the Passive Process Engine Environment** Christoph Mayr-Dorn, Stefan Bichler, Felix Keplinger, Alexander Egyed
DEMO	**Creating and Migrating Chatbots with Conga** Sara Perez-Soler, Esther Guerra, Juan de Lara
DEMO	**Robot Runner: A Tool for Automatically Executing Experiments on Robotics Software** Stan Swanborn, Ivano Malavolta
DEMO	**R-MOZART: A Reconfiguration Tool for WebThings Applications** Francisco Durán, Ajay Krishna, Michel Le Pallec, Radu Mateescu, Gwen Salaün

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TIME CEST LIVE	TIME CEST MIRROR	Thursday, May 27th (6/14)		
15:05 – 16:05	03:05 – 04:05	BLENDED SESSION	**MONITORING CLOUD-BASED SERVICES** Chair: Andrea Zisman	15:05 – 16:05 03:05 – 04:05 MIRROR →
		Technical Track	**Fast Outage Analysis of Large-scale Production Clouds with Service Correlation Mining** Yaohui Wang, Guozheng Li, Zijian Wang, Yu Kang, Yangfan Zhou, Hongyu Zhang, Feng Gao, Jeffrey Sun, Li Yang, Pochian Lee, Zhangwei Xu, Pu Zhao, Bo Qiao, Liqun Li, Xu Zhang, Qingwei Lin	15:05 – 15:25
		SEIP	**Neural Knowledge Extraction From Cloud Service Incidents** Manish Shetty, Chetan Bansal, Sumit Kumar, Nikitha Rao, Nachiappan Nagappan, Thomas Zimmermann	15:25 – 15:45
		SEIP	**FIXME: Enhance Software Reliability with Hybrid Approaches in Cloud** Jinho Hwang, Larisa Shwartz, Qing Wang, Raghav Batta, Harshit Kumar, Michael Nidd	15:45 – 16:05
		BLENDED SESSION	**API: DEVELOPMENT** Chair: Carolyn Seaman	15:05 – 16:05 03:05 – 04:05 MIRROR →
		SEIP	**Unveiling the Mystery of API Evolution in Deep Learning Frameworks -- A Case Study of Tensorflow 2** Zejun Zhang, Yanming Yang, Xin Xia, David Lo, Xiaoxue Ren, John Grundy	15:05 – 15:25
		Technical Track	**Domain-Specific Fixes for Flaky Tests with Wrong Assumptions on Underdetermined Specifications** Peilun Zhang, Yanjie Jiang, Anjiang Wei, Victoria Stodden, Darko Marinov, August Shi	15:25 – 15:45
		Technical Track	**Studying Test Annotation Maintenance in the Wild** Dong Jae Kim, Nikolaos Tsantalis, Tse-Hsun (Peter) Chen, Jinqiu Yang	15:45 – 16:05
		BLENDED SESSION	**PROGRAM REPAIR: AUTOMATED PATCHING** Chair: Antonia Bertolino	15:05 – 16:05 03:05 – 04:05 MIRROR →
		Journal First	**Automated Patch Transplantation** Ridwan Salihin Shariffdeen, Shin Hwei Tan, Mingyuan Gao, Abhik Roychoudhury	15:05 – 15:25
		Technical Track	**Synthesizing Object State Transformers for Dynamic Software Updates** Zelin Zhao, Yanyan Jiang, Chang Xu, Tianxiao Gu, Xiaoxing Ma *Awarded paper:* ACM Europe Council Best Paper Award, ACM SIGSOFT Distinguished Paper Award	15:25 – 15:45
		Technical Track	**Fast and Precise On-the-fly Patch Validation for All** Lingchao Chen, Yicheng Ouyang, Lingming Zhang	15:45 – 16:05

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Detailed Program: May 27th

Thursday, May 27th (7/14)

TIME CEST LIVE	TIME CEST MIRROR			
15:05 – 16:05	03:05 – 04:05	BLENDED SESSION	TESTING: FLAKY TESTS Chair: José Miguel Rojas	15:05 – 16:05 03:05 – 04:05 MIRROR
		Journal First	**Quantifying, Characterizing, and Mitigating Flakily Covered Program Elements** Shivashree Vysali Vaidhyam Subramanian, Shane McIntosh, Bram Adams	15:05 – 15:25
		Technical Track	**FlakeFlagger: Predicting Flakiness Without Rerunning Tests** Abdulrahman Alshammari, Christopher Morris, Michael Hilton, Jonathan Bell	15:25 – 15:45
		Technical Track	**An Empirical Analysis of UI-based Flaky Tests** Alan Romano, Zihe Song, Sampath Grandhi, Wei Yang, Weihang Wang	15:45 – 16:05
		JSEET	NOVEL APPROACHES TO SE EDUCATION I Chair: Hakan Erdogmus	15:05 – 16:05 03:05 – 04:05 MIRROR
		JSEET	**Constructive Master's Thesis Work in Industry: Guidelines for Applying Design Science Research** Eric Knauss	15:05 – 15:25
		JSEET	**Onboarding in Software Product Lines: Concept Maps as Welcome Guides** Maider Azanza, Arantza Irastorza, Raul Medeiros, Oscar Diaz	15:25 – 15:45
		JSEET	**Improving Concept Learning Through Specialized Digital Fanzines** José Manuel Redondo López	15:45 – 16:05
		ACM SRC	ACM STUDENTS RESEARCH COMPETITION: FINAL ROUND - PRESENTATIONS 1 Chair: Aurora Ramírez, Sergio Segura	15:05 – 16:05 LIVE SCHEDULE ONLY
			Presentations of selected papers from the jury	
16:05 – 16:25	04:05 – 04:25	SOCIAL	VIRTUAL TRIP TO MADRID	16:05 – 16:25 04:05 – 04:25 MIRROR
			A colleague from the ICSE Organising Committee will broadcast live a 20 minutes walk to show you one of the tourist landmarks in Madrid: Plaza de Oriente	

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Detailed Program: May 27th

TIME CEST LIVE	TIME CEST MIRROR	Thursday, May 27th (8/14)		
16:30 – 17:30	04:30 – 05:30	BLENDED SESSION	**DEEP NEURAL NETWORKS: DATA SELECTION** Chair: Ayse Tosun	16:30 – 17:30 04:30 – 05:30 MIRROR
		Journal First	**Test Selection for Deep Learning Systems** Wei Ma, Mike Papadakis, Anestis Tsakmalis, Maxime Cordy, Yves Le Traon	16:30 – 16:50
		SEIP	**On the experiences of adopting automated data validation in an industrial machine learning project** Lucy Ellen Lwakatare, Ellinor Rånge, Ivica Crnkovic, Jan Bosch	16:50 – 17:10
		Technical Track	**Distribution-Aware Testing of Neural Networks Using Generative Models** Swaroopa Dola, Matthew B Dwyer, Mary Lou Soffa	17:10 – 17:30
		BLENDED SESSION	**SECURITY VULNERABILITIES: FROM 3RD PARTIES' CODE** Chair: Jeff Carver	16:30 – 17:30 04:30 – 05:30 MIRROR
		Journal First	**An Empirical Study of C++ Vulnerabilities in Crowd-Sourced Code Examples** Morteza Verdi, Ashkan Sami, Jafar Akhondali, Foutse Khomh, Gias Uddin, Alireza Karami Motlagh	16:30 – 16:50
		SEIP	**Anomalicious: Automated Detection of Anomalous and Potentially Malicious Commits on GitHub** Danielle Gonzalez, Thomas Zimmermann, Patrice Godefroid, Max Schaefer	16:50 – 17:10
		Technical Track	**Why Security Defects Go Unnoticed during Code Reviews? A Case-Control Study of the Chromium OS Project** Rajshakhar Paul, Asif Kamal Turzo, Amiangshu Bosu	17:10 – 17:30
		BLENDED SESSION	**MUTATION TESTING: MUTANT SELECTION** Chair: Sigrid Eldh	16:30 – 17:25 04:30 – 05:25 MIRROR
		Journal First	**Killing Stubborn Mutants with Symbolic Execution** Thierry Titcheu Chekam, Mike Papadakis, Maxime Cordy, Yves Le Traon	16:30 – 16:50
		NIER	**Toward Speeding up Mutation Analysis by Memoizing Expensive Methods** Ali Ghanbari, Andrian Marcus	16:50 – 17:05
		SEIP	**What It Would Take to Use Mutation Testing in Industry—A Study at Facebook** Moritz Beller, Chu-Pan Wong, Johannes Bader, Andrew Scott, Mateusz Machalica, Satish Chandra, Erik Meijer	17:05 – 17:25

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Detailed Program: May 27th

Thursday, May 27th (9/14)

TIME CEST LIVE	TIME CEST MIRROR			
16:30 – 17:40	04:30 – 05:40	BLENDED SESSION	**OPEN SOURCE: DEVELOPERS' SKILLS** Chair: Daniela Damian	16:30 – 17:30 04:30 – 05:30 MIRROR
		Journal First	**Software Engineering Whispers: The Effect of Textual Vs. Graphical Software Design Descriptions on Software Design Communication** Rodi Jolak, Maxime Savary-Leblanc, Manuela Dalibor, Andreas Wortmann, Regina Hebig, Juraj Vincur, Ivan Polasek, Xavier Le Pallec, Sebastian Gerard, Michel R. V. Chaudron	16:30 – 16:50
		Technical Track	**What Makes a Great Maintainer of Open Source Projects?** Edson Dias, Paulo Meirelles, Fernando Castor, Igor Steinmacher, Igor Wiese, Gustavo Pinto ***Awarded paper:*** ACM SIGSOFT Distinguished Paper Award	16:50 – 17:10
		Technical Track	**Representation of Developer Expertise in Open Source Software** Tapajit Dey, Andrey Karnauch, Audris Mockus	17:10 – 17:30
		JSEET	**JSEET KEYNOTE AND JSEET BEST PAPER AWARD** Chairs: Ana María Moreno and Hakan Erdogmus	16:30 – 17:40 04:30 – 05:40 MIRROR
		Award	**JSEET Best Paper Award - Teaching Model-based Requirements Engineering to Industry Professionals: An Experience Report** Marian Daun, Jennifer Brings, Marcel Goger, Walter Koch, Thorsten Weyer	16:30 – 16:40
		Keynote	**Reflections on the Role of Software Architecture in Software Engineering Education** David Garlan	16:40 – 17:40
		ACM SRC	**ACM STUDENTS RESEARCH COMPETITION: FINAL ROUND - PRESENTATIONS 2** Chairs: Aurora Ramírez, Sergio Segura	16:30 – 17:30 LIVE SCHEDULE ONLY
			Presentations of selected papers from the jury	
			BREAK 20'	17:30 – 17:50 05:30 – 05:50 MIRROR
17:50 – 18:45	05:50 – 06:45	AWARDS	**Other ICSE Awards** Chair: Antonia Bertolino	17:50 – 18:00 05:50 – 06:00 MIRROR
		KEYNOTE	**JEANNETTE WING:** Chair: Gail Murphy	18:00 – 18:45 06:00 – 06:45 MIRROR
			Data for Good: Ensuring the Responsible Use of Data to Benefit Society Brief summary of the Keynote here	
18:45 – 19:15	06:45 – 07:15	MEET WITH	**MEET JEANNETTE WING**	18:45 – 19:15 06:45 – 07:15 MIRROR
			Do you want to have the opportunity to meet and chat with the Keynotes and main Awardees from ICSE 2021? We are more than sure that after their interesting and inspired talks, you would have a lot of questions and comments for them, so join their corresponding sessions to get the chance of meeting and chatting with them	

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TIME CEST		Thursday, May 27th (10/14)
LIVE	MIRROR	
18:15 – 19:15	06:45 – 07:15	NETWORKING — LGBTIQ+ GROUP MEETING — 18:45 – 19:15 LIVE SCHEDULE ONLY →

Lesbian, Gay, Bisexual, Transgender, Intersexual, and Questioning (LGBTIQ) researchers and practitioners primarily come to software engineering conferences to discuss technical aspects of their work with the research community. But we are people, too, whose rights and safety are sometimes affected by the political climate. At this year's group meeting, LBGTIQ researchers, practitioners, and friends are invited to speak together to build community. We will also discuss how we fit in with our academic, industry, and governmental institutions, the current political climate around the world, and what we can do to help make all software engineering conferences and workshops to be safe and welcoming spaces for LBGTIQ members of the Software Engineering research community.

NETWORKING — COFFEE CHAT — 18:45 – 19:15 (06:45 – 07:15 LIVE EVENT) →

If we were meeting in person, there would be conversations around coffee tables in many different languages. To imitate this informal interaction we organise a series of chat room meetings in different languages.

Women in Software Engineering Research

Hablamos español

NETWORKING — MENTORING CIRCLE — Chair: Thomas Zimmermann (*LIVE SCHEDULE*), Julia Rubin (*MIRROR SCHEDULE*) — 18:45 – 19:15 (06:45 – 07:15 LIVE EVENT) →

ICSE 2021 will run a series of mentoring circles each led by senior software engineering researcher. Every mentoring circle has limited capacity (up to 10 mentees). The conversation can touch on any subject, and address any challenge experienced by the mentees. This is a limited-capacity by registration only event.

NETWORKING — MEET FACEBOOK RECRUITING & RESEARCH — 18:45 – 19:15 LIVE SCHEDULE ONLY →

Join Ph.D and Infrastructure recruiters to learn about the research and opportunities available at Facebook

DEMOS — TESTING 1 — Chair: Francisco Servant — 18:45 – 19:15 (06:45 – 07:15 MIRROR) →

Each demo makes a 1-minute presentation (displayed in the Demonstration room). At the end of each presentation, a breakout room will be created for each demo. Attendees will be able to join and discuss with the authors.

DEMO	**Efficient Fuzz Testing for Apache Spark Using Framework Abstraction** Qian Zhang, Jiyuan Wang, Muhammad Ali Gulzar, Rohan Padhye, Miryung Kim
DEMO	**Quartermaster: A Tool for Modeling and Simulating System Degradation** Matthew Pope, Jonathan Sillito
DEMO	**Demo: Mutation-based Evaluation of Security-focused Static Analysis Tools for Android** Amit Seal Ami, Kaushal Kafle, Kevin Moran, Adwait Nadkarni, Denys Poshyvanyk

Detailed Program: May 27th

Thursday, May 27th (11/14)

TIME CEST LIVE	TIME CEST MIRROR			
19:20 – 20:15	07:20 – 08:15	BLENDED SESSION	TESTING: GENERAL ISSUES Chair: Claudia Ayala	19:20 – 20:15 07:20 – 08:15 MIRROR
		NIER	**Towards Evidence-based Testability Measurements** Luca Guglielmo, Andrea Riboni, Giovanni Denaro	19:20 – 19:35
		Technical Track	**GenTree: Using Decision Trees to Learn Interactions for Configurable Software** KimHao Nguyen, ThanhVu Nguyen	19:35 – 19:55
		Technical Track	**Semantic Web Accessibility Testing via Hierarchical Visual Analysis** Mohammad Bajammal, Ali Mesbah	19:55 – 20:15
		BLENDED SESSION	CONTINUOUS INTEGRATION, FEATURE MODELS AND PROGRAM TRANSFORMATION Chair: Antonia Bertolino	19:20 – 20:10 07:20 – 08:10 MIRROR
		SEIP	**Enterprise-Driven Open Source Software: A Case Study on Security Automation** Florian Angermeir, Markus Voggenreiter, Fabiola Moyon, Daniel Mendez	19:20 – 19:40
		NIER	**Towards Automated Testing and Debugging of Feature Models** Viet-Man Le, Alexander Felfernig, Mathias Uta, David Benavides, Jose Galindo, Trang Tran	19:40 – 19:55
		NIER	**Towards Modal Software Engineering** Ramy Shahin	19:55 – 20:10
		BLENDED SESSION	SECURITY VULNERABILITIES: GENERAL ISSUES 1 Chair: Davide Fucci	19:20 – 20:15 07:20 – 08:15 MIRROR
		Technical Track	**Technical Leverage in a Software Ecosystem: Development Opportunities and Security Risks** Fabio Massacci, Ivan Pashchenko	19:20 – 19:40
		NIER	**Secure Software Development in the Era of Fluid Multi-party Open Software and Services** Ivan Pashchenko, Riccardo Scandariato, Antonino Sabetta, Fabio Massacci	19:40 – 19:55
		Journal First	**Detecting Software Security Vulnerabilities via Requirements Dependency Analysis** Wentao Wang, Faryn Dumont, Nan Niu, Glen Horton	19:55 – 20:15
19:20 – 21:10	07:20 – 09:10	TECHNICAL BRIEFING	BAYESIAN DATA ANALYSIS FOR SOFTWARE ENGINEERING Chair: Grace Lewis	19:20 – 21:10 07:20 – 09:10 MIRROR
			Bayesian Data Analysis for Software Engineering Richard Torkar, Carlo A. Furia, Robert Feldt	

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Detailed Program: May 27th

TIME CEST LIVE	TIME CEST MIRROR	Thursday, May 27th (12/14)

20:15 – 20:45 LIVE / 08:15 – 08:45 MIRROR

NETWORKING — COMMUNITY SPEED NETWORKING — 20:15 – 20:45 LIVE SCHEDULE ONLY →

In this series of speed networking events, ICSE participants can meet their peers.

LGBTIQ+
Andrew Begel

Blacks in Software Engineering

Women in Software Engineering

NETWORKING — YOGA AND BREATHWORKS
Chair: Birgit Penzenstadler — 20:15 – 20:45 LIVE SCHEDULE ONLY →

The yoga sessions are short introductory sessions to pranayama (working with the breath), asana (stretching), and meditation. No prior knowledge required - put on some comfy clothes and find a space to relax in.

DEMOS — EVOLUTION 3
Chair: Francisco Servant — 20:15 – 20:45 08:15 – 08:45 MIRROR →

Each demo makes a 1-minute presentation (displayed in the Demonstration room). At the end of each presentation, a breakout room will be created for each demo. Attendees will be able to join and discuss with the authors.

DEMO	**V2S: A Tool for Translating Video Recordings of Mobile App Usages into Replayable Scenarios** Madeleine Havranek, Carlos Bernal-Cárdenas, Nathan Cooper, Oscar Chaparro, Denys Poshyvanyk, Kevin Moran
DEMO	**gazel: Supporting Source Code Edits in Eye-Tracking Studies** Sarah Fakhoury, Devjeet Roy, Harry Pines, Tyler Cleveland, Cole S. Peterson, Venera Arnaoudova, Bonita Sharif, Jonathan I. Maletic
DEMO	**COSTER: A Tool for Finding Fully Qualified Names of API Elements in Online Code Snippets** C M Khaled Saifullah, Muhammad Asaduzzaman, Chanchal K. Roy

20:50 – 21:50 LIVE / 08:50 – 09:50 MIRROR

BLENDED SESSION — SECURITY VULNERABILITIES: DIFFERENT DOMAINS
Chair: Davide Fucci — 20:50 – 21:50 08:50 – 09:50 MIRROR →

Technical Track	**Containing Malicious Package Updates in npm with a Lightweight Permission System** Gabriel Ferreira, Limin Jia, Joshua Sunshine, Christian Kaestner	20:50 – 21:10
Technical Track	**Too Quiet in the Library: An Empirical Study of Security Updates in Android Apps' Native Code** Sumaya Almanee, Arda Ünal, Mathias Payer, Joshua Garcia	21:10 – 21:30
Technical Track	**If It's Not Secure, It Should Not Compile: Preventing DOM-Based XSS in Large-Scale Web Development with API Hardening** Pei Wang, Julian Bangert, Christoph Kern	21:30 – 21:50

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Detailed Program: May 27th

TIME CEST LIVE	TIME CEST MIRROR	Thursday, May 27th (13/14)		
20:50 – 21:50	08:50 – 09:50	BLENDED SESSION	**PROGRAM REPAIR: GENERAL ISSUES** Chair: Sira Vegas	20:50 – 21:50 08:50 – 09:50 MIRROR
		Technical Track	**Bounded Exhaustive Search of Alloy Specification Repairs** Simón Gutiérrez Brida, Germán Regis, Guolong Zheng, Hamid Bagheri, ThanhVu Nguyen, Nazareno Aguirre, Marcelo F. Frias	20:50 – 21:10
		Technical Track	**Shipwright: A Human-in-the-Loop System for Dockerfile Repair** Jordan Henkel, Denini Silva, Leopoldo Teixeira, Marcelo d'Amorim, Thomas Reps	21:10 – 21:30
		Technical Track	**CURE: Code-Aware Neural Machine Translation for Automatic Program Repair** Nan Jiang, Thibaud Lutellier, Lin Tan	21:30 – 21:50
		BLENDED SESSION	**FAULT LOCALIZATION 2** Chair: Davide Falessi	20:50 – 21:50 08:50 – 09:50 MIRROR
		Technical Track	**Fault Localization with Code Coverage Representation Learning** Yi Li, Shaohua Wang, Tien N. Nguyen	20:50 – 21:10
		Journal First	**PerfJIT: Test-level Just-in-time Prediction for Performance Regression Introducing Commits** Jinfu Chen, Weiyi Shang, Emad Shihab	21:10 – 21:30
		SEIP	**Scalable Statistical Root Cause Analysis on App Telemetry** Vijayaraghavan Murali, Edward Yao, Umang Mathur, Satish Chandra	21:30 – 21:50
		BLENDED SESSION	**SECURITY VULNERABILITIES: GENERAL ISSUES 2** Chair: Francisco Servant	20:50 – 21:40 08:50 – 09:40 MIRROR
		Technical Track	**RAICC: Revealing Atypical Inter-Component Communication in Android Apps** Jordan Samhi, Alexandre Bartel, Tegawendé F. Bissyandé, Jacques Klein	20:50 – 21:10
		NIER	**Towards a Model-Integrated Runtime Monitoring Infrastructure for Cyber-Physical Systems** Michael Vierhauser, Hussein Marah, Antonio Garmendia, Jane Cleland-Huang, Manuel Wimmer	21:10 – 21:25
		NIER	**Should you Upgrade Official Docker Hub Images in Production Environments?** Sara Gholami, Hamzeh Khazaei, Cor-Paul Bezemer	21:25 – 21:40

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Detailed Program: May 27th

TIME CEST		Thursday, May 27th		(14/14)
LIVE	MIRROR			
20:50 – 21:50	08:50 – 09:50	JSEET	NOVEL APPROACHES TO SE EDUCATION II Chair: Hakan Erdogmus	20:50 – 21:50 08:50 – 09:50 MIRROR →
		JSEET	**Qualifying Software Engineers Undergraduates in DevOps - Challenges of introducing technical and non-technical concepts in a project-oriented course** Isaque Alves and Carla Silva Rocha Aguiar	20:50 – 21:10
		JSEET	**The Diversity of Gamification Evaluation in the Software Engineering Education and Industry: Trends, Comparisons and Gaps** Rodrigo Monteiro, Maurício Souza, Sandro Oliveira, Carlos Portela and Cesar Lobato	21:10 – 21:30
		JSEET	**An Inquisitive Code Editor for Addressing Novice Programmers' Misconceptions of Program Behavior** Austin Henley, Julian Ball, Benjamin Klein, Aiden Rutter and Dylan Lee	21:30 – 21:50

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TIME CEST LIVE	TIME CEST MIRROR	Friday, May 28th (1/11)		
10:00 – 10:55	22:00 – 22:55	BLENDED SESSION	**OPEN SOURCE: GENERAL ISSUES** Chair: Igor Steinmacher	10:00 – 10:55 22:00 – 22:55 MIRROR →
		Technical Track	**Extracting Rationale for Software Development Decisions—A Study of Python Email Archives** Pankajeshwara Sharma, Bastin Tony Roy Savarimuthu, Nigel Stanger	10:00 – 10:20
		SEIP	**An Empirical Study of the Landscape of Open Source Projects in Baidu, Alibaba, and Tencent** Junxiao Han, Shuiguang Deng, David Lo, Chen Zhi, Jianwei Yin, Xin Xia	10:20 – 10:40
		SEIS	**Understanding Community Smells Variability: A Statistical Approach** Gemma Catolino, Fabio Palomba, Damian Andrew Tamburri, Alexander Serebrenik	10:40 – 10:55
		BLENDED SESSION	**AGILE METHODS** Chair: Silverio Martínez-Fernández	10:00 – 10:55 22:00 – 22:55 MIRROR →
		Journal First	**Real World Scrum A Grounded Theory of Variations in Practice** Zainab Masood, Rashina Hoda, Kelly Blincoe	10:00 – 10:20
		SEIS	**Awareness and Perception of Agile in Saudi Software Industry** Fahad Altuwaijri, Maria Angela Ferrario	10:20 – 10:35
		Technical Track	**Playing Planning Poker in Crowds: Human Computation of Software Effort Estimates** Mohammed Alhamed, Tim Storer	10:35 – 10:55
		BLENDED SESSION	**PRIVACY IN APPS: CASES FROM COVID-19** Chair: Andrea Zisman	10:00 – 10:55 22:00 – 22:55 MIRROR →
		SEIS	**COVID-19 Vs Social Media apps: Does privacy really matter?** Omar Haggag, Sherif Haggag, John Grundy, Mohamed Abdelrazek	10:00 – 10:15
		Technical Track	**An Empirical Assessment of Global COVID-19 Contact Tracing Applications** Ruoxi Sun, Wei (Zach) Wang, Minhui (Jason) Xue, Gareth Tyson, Seyit Camtepe, Damith C. Ranasinghe	10:15 – 10:35
		Technical Track	**Sustainable Solving: Reducing The Memory Footprint of IFDS-Based Data Flow Analyses Using Intelligent Garbage Collection** Steven Arzt	10:35 – 10:55

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Friday, May 28th (2/11)

TIME CEST LIVE	TIME CEST MIRROR			
10:00 – 11:00	22:00 – 23:00	BLENDED SESSION	**IMAGE PROCESSING** Chair: Oscar Pastor	10:00 – 10:55 22:00 – 22:55 MIRROR
		Journal First	**psc2code: Denoising Code Extraction from Programming Screencasts** Lingfeng Bao , Zhenchang Xing, Xin Xia, David Lo, Minghui Wu, Xiaohu Yang	10:00 – 10:20
		Technical Track	**IMGDroid: Detecting Image Loading Defects in Android Applications** Wei Song, Mengqi Han, Jeff Huang	10:20 – 10:40
		SEIS	**Image-based Social Sensing: Combining AI and the Crowd to Mine Policy-Adherence Indicators from Twitter** Virginia Negri, Dario Scuratti, Stefano Agresti, Donya Rooein, Gabriele Scalia, Jose Luis Fernandez-Marquez, Amudha Ravi Shankar, Mark Carman, Barbara Pernici	10:40 – 10:55
		JSEET	**INSTITUTIONAL STRATEGIES TO SE EDUCATION II** Chairs: Ana María Moreno	10:00 – 11:00 22:00 – 23:00 MIRROR
		JSEET	**Is Secure Coding Education in the Industry Needed? An Investigation Through a Large Scale Survey** Tiago Espinha Gasiba, Ulrike Lechner, Maria Pinto-Albuquerque and Daniel Mendez	10:00 – 10:20
		JSEET	**To get good student ratings you should only teach programming courses? Investigation and implications of student evaluations of teaching in a software engineering context** Antti Knutas, Timo Hynninen and Maija Hujala	10:20 – 10:40
		JSEET	**Morning or Evening? An Examination of Circadian Rhythms of CS1 Students** Albina Zavgorodniaia, Raj Shrestha, Juho Leinonen, Arto Hellas and John Edwards	10:40 – 11:00
10:55 – 11:25	---	NETWORKING	**TAKE A COFFEE WITH THE OPEN SCIENCE CHAIR OF ICSE 2021**	10:55 – 11:25 LIVE SCHEDULE ONLY
			Are you interested on the tasks done by the ICSE Organizing Committee? Do you want to ask questions, discuss different points of view or share ideas regarding different tasks associated to the ICSE Organizing Committee roles in a relaxed environment? Come and take a coffee with some of the OC members!	
		NETWORKING	**MENTORING CIRCLE** Chair: Lars Grunske	10:55 – 11:25 LIVE SCHEDULE ONLY
			ICSE 2021 will run a series of mentoring circles each led by senior software engineering researcher. Every mentoring circle has limited capacity (up to 10 mentees). The conversation can touch on any subject, and address any challenge experienced by the mentees. This is a limited-capacity by registration only event.	
		HUAWEI	**SE RESEARCH @ HUAWEI**	10:55 – 11:25 LIVE SCHEDULE ONLY
			Meeting SE Researchers at Huawei	

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Detailed Program: May 28th

Friday, May 28th (3/11)

TIME CEST LIVE	TIME CEST MIRROR	
10:55 – 11:25	22:55 – 23:25	FACEBOOK — MEET FACEBOOK RECRUITING & RESEARCH — MIRROR SCHEDULE ONLY 22:55 – 23:25 LIVE
		Join Ph.D and Infrastructure recruiters to learn about the research and opportunities available at Facebook
		DEMOS — TESTING 2 — Chair: Giuseppe Scanniello — 10:55 – 11:25 (22:55 – 23:25 MIRROR)
		Each demo makes a 1-minute presentation (displayed in the Demonstration room). At the end of each presentation, a breakout room will be created for each demo. Attendees will be able to join and discuss with the authors.
		DEMO — **FastCA: An Effective and Efficient Tool for Combinatorial Covering Array Generation** — Jinkun Lin, Shaowei Cai, Bing He, Yingjie Fu, Chuan Luo, Qingwei Lin
		DEMO — **GAssert: A Fully Automated Tool to Improve Assertion Oracles** — Valerio Terragni, Gunel Jahangirova, Paolo Tonella, Mauro Pezze
		DEMO — **UIS-Hunter: Detecting UI Design Smells in Android Apps** — Bo Yang, Zhenchang Xing, Xin Xia, Chunyang Chen, Deheng Ye, Shanping Li
		DEMO — **Testing Framework for Black-box AI Models** — Aniya Aggarwal, Samiulla Shaikh, Sandeep Hans, Swastik Haldar, Rema Ananthanarayanan, Diptikalyan Saha
11:10 – 13:00	23:10 – 01:00	TECHNICAL BRIEFING — ADVANCES IN CODE SUMMARIZATION — Chair: Xavier Franch — 11:10 – 13:00 (23:10 – 01:00 MIRROR)
		Advances in Code Summarization — Utkarsh Desai, Giriprasad Sridhara, Srikanth Tamilselvam
11:30 – 12:30	23:30 – 00:30	BLENDED SESSION — API: EVOLUTION AND MAINTENANCE 2 — Chair: Giuseppe Scanniello — 11:30 – 12:30 (23:30 – 00:30 MIRROR)
		SEIP — **Identifying and Characterizing Silently-Evolved Methods in the Android API** — Pei Liu, Li Li, Yichun Yan, Mattia Fazzini, John Grundy — 11:30 – 11:50
		Technical Track — **DepOwl: Detecting Dependency Bugs to Prevent Compatibility Failures** — Zhouyang Jia, Shanshan Li, Tingting Yu, Chen Zeng, Erci Xu, Xiaodong Liu, Ji Wang, Xiangke Liao — 11:50 – 12:10
		Technical Track — **Hero: On the Chaos When PATH Meets Modules** — Ying Wang, Liang Qiao, Chang Xu, Yepang Liu, Shing-Chi Cheung, Na Meng, Hai Yu, Zhiliang Zhu — 12:10 – 12:30
		Awarded paper: ACM SIGSOFT Distinguished Paper Award

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TIME CEST LIVE	TIME CEST MIRROR	Friday, May 28th (4/11)		
11:30 – 12:30	23:30 – 00:30	BLENDED SESSION	**TESTING: AUTOMATION** Chair: José Miguel Rojas	11:30 – 12:30 23:30 – 00:30 MIRROR →
		SEIP	**IntelliGen: Automatic Driver Synthesis for FuzzTesting** Mingrui Zhang, Jianzhong Liu, Fuchen Ma, Huafeng Zhang, Yu Jiang	11:30 – 11:50
		Technical Track	**Layout and Image Recognition Driving Cross-Platform Automated Mobile Testing** Shengcheng Yu, Chunrong Fang, Yexiao Yun, Yang Feng	11:50 – 12:10
		SEIP	**Industry Practice of Coverage-Guided Enterprise-Level DBMS Fuzzing** Mingzhe Wang, Zhiyong Wu, Xinyi Xu, Jie Liang, Chijin Zhou, Huafeng Zhang, Yu Jiang	12:10 – 12:30
		BLENDED SESSION	**TESTING: 3RD PARTY SOFTWARE** Chair: Leonardo Mariani	11:30 – 12:30 23:30 – 00:30 MIRROR →
		Technical Track	**Evaluating Unit Testing Practices in R Packages** Melina Vidoni	11:30 – 11:50
		Technical Track	**Data-Oriented Differential Testing of Object-Relational Mapping Systems** Thodoris Sotiropoulos, Stefanos Chaliasos, Vaggelis Atlidakis, Dimitris Mitropoulos, Diomidis Spinellis ***Awarded:*** Distinguished Artifact Award – Replication Package	11:50 – 12:10
		Journal First	**A Practical Approach to Verification of Floating-Point C/C++ Programs with math.h/cmath Functions** Roberto Bagnara, Michele Chiari, Roberta Gori, Abramo Bagnara	12:10 – 12:30
		BLENDED SESSION	**FAULT LOCALIZATION 3** Chair: Mika Mäntylä	11:30 – 12:30 23:30 – 00:30 MIRROR →
		Technical Track	**An Empirical Study on Deployment Faults of Deep Learning Based Mobile Applications** Zhenpeng Chen, Huihan Yao, Yiling Lou, Yanbin Cao, Yuanqiang Liu, Haoyu Wang, Xuanzhe Liu	11:30 – 11:50
		SEIP	**MicroHECL: High-Efficient Root Cause Localization in Large-Scale Microservice Systems** Dewei Liu, Chuan He, Xin Peng, Fan Lin, Chenxi Zhang, Shengfang Gong, Ziang Li, Jiayu Ou, Zheshun Wu	11:50 – 12:10
		Technical Track	**Extracting Concise Bug-Fixing Patches from Human-Written Patches in Version Control Systems** Yanjie Jiang, Hui Liu, Nan Niu, Lu Zhang, Yamin Hu	12:10 – 12:30

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TIME CEST LIVE	TIME CEST MIRROR	Friday, May 28th (5/11)
12:30 – 13:00	00:30 – 01:00	NETWORKING — MEET YOUR PEERS — 12:30 – 13:00 (00:30 – 01.00 LIVE EVENT) →
		In this series of speed networking events, ICSE participants can meet their academic peers **We love dogs** **We love cats** **We Love other pets** **No pets**
		NETWORKING — ICSE IS RUNNING Chairs: Ayushi Rastogi, Luís Cruz — 12:30 – 13:00 (00:30 – 01:00 MIRROR) →
		The first-ever virtual run event at ICSE! From 25-27, May 2021 AOE attendees from all over the world will run 5 km. Join us! #ICSE21isRunning
		BREAK 35' — 13:00 – 13:35 (01:00 – 01:35 MIRROR)
13:35 – 14:30	01:35 – 02:30	AWARDS — IEEE TCSE Harlan Mills Award Chair: Forrest Shull — 13:35 – 13:45 (01:35 – 01:45 MIRROR) →
		AWARD LECTURE — DIETER ROMBACH Chair: Forrest Shull — 13:45 – 14:30 (01:45 – 02:30 MIRROR) →
		Software Engineering - Theory for Practice
14:30 – 15:00	02:30 – 03:00	MEET WITH — MEET DIETER ROMBACH — 14:30 – 15:00 (02:30 – 03:00 MIRROR) →
		Do you want to have the opportunity to meet and chat with the Keynotes and main Awardees from ICSE 2021? We are more than sure that after their interesting and inspired talks, you would have a lot of questions and comments for them, so join their corresponding sessions to get the chance of meeting and chatting with them
		NETWORKING — COFFEE CHAT — 14:30 – 15:00 LIVE SCHEDULE ONLY →
		If we were meeting in person, there would be conversations around coffee tables in many different languages. To imitate this informal interaction we organise a series of chat room meetings in different languages. **Women in Software Engineering Research** **Hablamos español**
		NETWORKING — MENTORING CIRCLE Chair: Diomidis Spinellis — 14:30 – 15:00 LIVE SCHEDULE ONLY →
		ICSE 2021 will run a series of mentoring circles each led by senior software engineering researcher. Every mentoring circle has limited capacity (up to 10 mentees). The conversation can touch on any subject, and address any challenge experienced by the mentees. This is a limited-capacity by registration only event.
		INVENIA — OPPORTUNITIES AT INVENIA LABS — 14:30 – 15:00 LIVE SCHEDULE ONLY →
		A chance to network with members of the Invenia Labs team and ask questions about what Invenia is working on.

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TIME CEST LIVE	TIME CEST MIRROR	Friday, May 28th (6/11)		
15:05 – 16:05	03:05 – 04:05	BLENDED SESSION	ANALYZING SYSTEM PROPERTIES: CORRECTNESS, DETERMINISM, REALIZABILITY Chair: Maria Teresa Baldassarre	15:05 – 16:05 03:05 – 04:05 MIRROR →
		Technical Track	**JEST: N+1-version Differential Testing of Both JavaScript Engines and Specification** Jihyeok Park, Seungmin An, Dongjun Youn, Gyeongwon Kim, Sukyoung Ryu ***Awarded paper:*** ACM SIGSOFT Distinguished Paper Award	15:05 – 15:25
		Technical Track	**Unrealizable Cores for Reactive Systems Specifications** Shahar Maoz, Rafi Shalom	15:25 – 15:45
		Technical Track	**Verifying Determinism in Sequential Programs** Rashmi Mudduluru, Jason Waataja, Suzanne Millstein, Michael D. Ernst	15:45 – 16:05
		BLENDED SESSION	PERFORMANCE MODELING OF HIGHLY CONFIGURABLE SOFTWARE SYSTEMS Chair: Carolyn Seaman	15:05 – 16:05 03:05 – 04:05 MIRROR →
		Technical Track	**White-Box Performance-Influence Models: A Profiling and Learning Approach** Max Weber, Sven Apel, Norbert Siegmund	15:05 – 15:25
		Technical Track	**White-Box Analysis over Machine Learning: Modeling Performance of Configurable Systems** Miguel Velez, Pooyan Jamshidi, Norbert Siegmund, Sven Apel, Christian Kaestner	15:25 – 15:45
		Journal First	**ConEx: Efficient Exploration of Big-Data System Configurations for Better Performance** Rahul Krishna, Chong Tang, Kevin Sullivan, Baishakhi Ray	15:45 – 16:05
		BLENDED SESSION	CODE REVIEW: READABILITY AND REFACTORING Chair: Francisco Servant	15:05 – 16:05 03:05 – 04:05 MIRROR →
		Journal First	**The Effectiveness of Supervised Machine Learning Algorithms in Predicting Software Refactoring** Maurício Aniche, Erick Maziero, Rafael S. Durelli, Vinicius Durelli	15:05 – 15:25
		Journal First	**How Does Code Readability Change During Software Evolution?** Valentina Piantadosi, Fabiana Fierro, Simone Scalabrino, Alexander Serebrenik, Rocco Oliveto	15:25 – 15:45
		SEIP	**Refactoring Practices in the Context of Modern Code Review: An Industrial Case Study at Xerox** Eman Abdullah AlOmar, Hussein Alrubaye, Mohamed Wiem Mkaouer, Ali Ouni, Marouane Kessentini	15:45 – 16:05

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TIME CEST LIVE	TIME CEST MIRROR	Friday, May 28th (7/11)		
15:05 – 16:05	03:05 – 04:05	BLENDED SESSION	CONFIGURATION OF SOFTWARE SYSTEMS: OPTIMIZATION Chair: Sergio Segura	15:05 – 16:05 03:05 – 04:05 MIRROR →
		Technical Track	**Resource-Guided Configuration Space Reduction for Deep Learning Models** Yanjie Gao, Yonghao Zhu, Hongyu Zhang, Haoxiang Lin, Mao Yang	15:05 – 15:25
		Journal First	**ConfigMiner: Identifying the Appropriate Configuration Options for Config-related User Questions by Mining Online Forums** Mohammed Sayagh, Ahmed E. Hassan	15:25 – 15:45
		Journal First	**Whence to Learn? Transferring Knowledge in Configurable Systems using BEETLE** Rahul Krishna, Vivek Nair, Pooyan Jamshidi, Tim Menzies	15:45 – 16:05
15:05 – 16:25	03:05 – 04:25	JSEET	TEACHING SOFTWARE QUALITY II Chair: Ana María Moreno	15:05 – 16:25 03:05 – 04:25 MIRROR →
		JSEET	**Finding Anomalies in Scratch Assignments** Nina Körber, Katharina Geldreich, Andreas Stahlbauer and Gordon Fraser	15:05 – 15:25
		JSEET	**How do students test software units?** Lex Bijlsma, Niels Doorn, Harrie Passier, Harold Pootjes and Sylvia Stuurman	15:25 – 15:45
		JSEET	**SQLRepair: Identifying and Repairing Mistakes in Student-Authored SQL Queries** Kai Presler-Marshall, Sarah Heckman and Kathryn Stolee	15:45 – 16:05
		JSEET	**LitterBox: A Linter for Scratch Programs** Gordon Fraser, Ute Heuer, Nina Körber, Florian Obermüller and Ewald Wasmeier	16:05 – 16:25
15:05 – 17:20	03:05 – 05:20	TECHNICAL BRIEFING	THE SOFTWARE CHALLENGES OF BUILDING SMARTCHATBOTS Chair: Grace Lewis	15:05 – 17:20 03:05 – 05:20 MIRROR →
			The Software Challenges of Building SmartChatbots Gwendal Daniel, Jordi Cabot	
16:05 – 16:35	---	NETWORKING	YOGA AND BREATHWORKS Chair: Birgit Penzenstadler	16:05 – 16:35 LIVE SCHEDULE ONLY →
			The yoga sessions are short introductory sessions to pranayama (working with the breath), asana (stretching), and meditation. No prior knowledge required - put on some comfy clothes and find a space to relax in.	
		NETWORKING	TAKE A COFFEE WITH THE PROGRAM CO-CHAIRS OF ICSE 2022	16:05 – 16:35 LIVE SCHEDULE ONLY →
			Are you interested on the tasks done by the ICSE Organizing Committee? Do you want to ask questions, discuss different points of view or share ideas regarding different tasks associated to the ICSE Organizing Committee roles in a relaxed environment? Come and take a coffee with some of the OC members!	

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All times in **CEST**

Detailed Program: May 28th

TIME CEST LIVE	TIME CEST MIRROR	Friday, May 28th (8/11)		
16:05 – 16:35	---	NETWORKING	ICPC Chair: Alexander Serebrenik	16:05 – 16:35 LIVE SCHEDULE ONLY →
		The ICPC event is video presenting the program comprehension community to the broader ICSE audience. We interview several junior and senior researchers working on different aspects of program comprehension and introduce the upcoming edition of ICPC!		
16:40 – 18:00	04:40 – 06:00	BLENDED SESSION	SEIP TALKS Chair: Sigrid Eldh	16:40 – 17:55 04:40 – 05:55 MIRROR →
		SEIP	**How to integrate with real cars - minimizing lead time at Volkswagen** Michael Nolting, Jan Kantert	16:40 – 17:05
		SEIP	**Re-Imagining Performance Reviews: Automated Dashboards for Continuous Visibility of Engineers' Performance** Fatma Meawad	17:05 – 17:30
		SEIP	**Challenges and Gratitude: A Diary Study of Software Engineers Working From Home During Covid-19 Pandemic** Jenna Butler, Sonia Jaffe	17:30 – 17:55
		BLENDED SESSION	DEFECT PREDICTION: MODELING AND PERFORMANCE Chair: Ayse Tosun	16:40 – 18:00 04:40 – 06:00 MIRROR →
		Journal First	**On the Need of Preserving Order of Data When Validating Within-Project Defect Classifiers** Davide Falessi, Jacky Huang, Likhita Narayana, Jennifer Fong Thai, Burak Turhan	16:40 – 17:00
		Journal First	**Using black-box performance models to detect performance regressions under varying workloads: an empirical study** Lizhi Liao, Jinfu Chen, Heng Li, Yi Zeng, Weiyi Shang, Jianmei Guo, Catalin Sporea, Andrei Toma, Sarah Sajedi	17:00 – 17:20
		Journal First	**Predicting Performance Anomalies in Software Systems at Run-time** Guoliang Zhao, Safwat Hassan, Ying Zou, Derek Truong, Toby Corbin	17:20 – 17:40
		Technical Track	**How Developers Optimize Virtual Reality Applications: A Study of Optimization Commits in Open Source Unity Projects** Fariha Nusrat, Foyzul Hassan, Hao Zhong, Xiaoyin Wang	17:40 – 18:00

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All times in **CEST**

TIME CEST LIVE	TIME CEST MIRROR	Friday, May 28th (9/11)		
16:40 – 17:55	04:40 – 05:55	BLENDED SESSION	**DEVELOPERS: WELL-BEING AND PRODUCTIVITY** Chair: Birgit Penzenstadler	16:40 – 17:55 04:40 – 05:55 MIRROR →
		SEIS	**QFL: Data-Driven Feedback Loop to Manage Quality in Agile Development** Lidia López, Alessandra Bagnato, Antonin Ahbervé, Xavier Franch	16:40 – 16:55
		SEIP	**The Daily Life of Software Engineers during the COVID-19 Pandemic** Daniel Russo, Paul Hanel, Seraphina Altnickel, Niels Van Berkel	16:55 – 17:15
		Journal First	**Pandemic Programming: How Covid-19 affects software developers and how their organizations can help** Paul Ralph, Sebastian Baltes, Gianisa Adisaputri, Richard Torkar, Vladimir Kovalenko, Marcos Kalinowski, Nicole Novielli, Shin Yoo, Xavier Devroey, Xin Tan, Minghui Zhou, Burak Turhan, Rashina Hoda, Hideaki Hata, Gregorio Robles, Amin Milani Fard, Rana Alkadhi	17:15 – 17:35
		Technical Track	**"How Was Your Weekend?" Software Development Teams Working From Home During COVID-19** Courtney Miller, Paige Rodeghero, Margaret-Anne Storey, Denae Ford, Thomas Zimmermann ***Awarded paper:*** ACM SIGSOFT Distinguished Paper Award	17:35 – 17:55
		BLENDED SESSION	**SOURCE CODE HISTORIES AND DOCUMENTATION** Chair: Davide Fucci	16:40 – 17:50 04:40 – 05:50 MIRROR →
		SEIS	**Understanding Emotions of Developer Community Towards Software Documentation** Akhila Sri Manasa Venigalla, Sridhar Chimalakonda	16:40 – 16:55
		Technical Track	**On Indirectly Dependent Documentation in the Context of Code Evolution: A Study** Devika Sondhi, Avyakt Gupta, Salil Purandare, Ankit Rana, Deepanshu Kaushal, Rahul Purandare	16:55 – 17:15
		NIER	**Mining Software Repositories with a Collaborative Heuristic Repository** Hlib Babii, Julian Prenner, Laurin Stricker, Anjan Karmakar, Andrea Janes, Romain Robbes	17:15 – 17:30
		Technical Track	**CodeShovel: Constructing Method-Level Source Code Histories** Felix Grund, Shaiful Alam Chowdhury, Nick Bradley, Braxton Hall, Reid Holmes ***Awarded paper:*** ACM SIGSOFT Distinguished Paper Award	17:30 – 17:50
			BREAK 20'	18:00 – 18:20 06:00 – 06:20 MIRROR

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Detailed Program: May 28th

TIME CEST LIVE	TIME CEST MIRROR	Friday, May 28th (10/11)			
18:20 – 19:30	06:20 – 07:30	AWARDS	Other IEEE TCSE Awards Chair: Ladan Tahvildari	18:20 – 18:30 06:20 – 06:30 MIRROR	→
		NETWORKING	TOWN HALL Chairs: Thomas Zimmermann, Ladan Tahvildari	18:30 – 19:30 06:30 – 07:30 MIRROR	→
		Learn more about the activities of IEEE TCSE and ACM SIGSOFT. Discuss issues and share ideas on how to improve the Software Engineering community.			
19:30 – 20:30	07:30 – 08:30	BLENDED SESSION	GAMES Chair: Gregorio Robles	19:30 – 20:30 07:30 – 08:30 MIRROR	→
		Journal First	**An Empirical Study of the Characteristics of Popular Minecraft Mods** Daniel Lee, Gopi Krishnan Rajbahadur, Dayi Lin, Mohammed Sayagh, Cor-Paul Bezemer, Ahmed E. Hassan	19:30 – 19:50	
		Journal First	**Building the perfect game – an empirical study of game modifications** Daniel Lee, Dayi Lin, Cor-Paul Bezemer, Ahmed E. Hassan	19:50 – 20:10	
		Technical Track	**We'll Fix It in Post: What Do Bug Fixes in Video Game Update Notes Tell Us?** Andrew Truelove, Eduardo Santana de Almeida, Iftekhar Ahmed	20:10 – 20:30	
		BLENDED SESSION	PATTERNS AND SMELLS Chair: Davide Falessi	19:30 – 20:30 07:30 – 08:30 MIRROR	→
		Journal First	**Are Multi-language Design Smells Fault-prone? An Empirical Study** Mouna Abidi, Md Saidur Rahman, Moses Openja, Foutse Khomh	19:30 – 19:50	
		Journal First	**Investigating Design Anti-pattern and Design Pattern Mutations and Their Change- and Fault-proneness** Zeinab Kermansaravi, Md Saidur Rahman, Foutse Khomh, Fehmi Jaafar, Yann-Gaël Guéhéneuc	19:50 – 20:10	
		SEIP	**Automatically Authoring Regression Tests for Machine-Learning Based Systems** Junjie Zhu, Teng Long, Atif Memon	20:10 – 20:30	
		BLENDED SESSION	PROGRAMMING: LOW LEVEL Chair: Ignacio Panach	19:30 – 20:30 07:30 – 08:30 MIRROR	→
		Journal First	**A Chaos Engineering System for Live Analysis and Falsification of Exception-handling in the JVM** Long Zhang, Brice Morin, Philipp Haller, Benoit Baudry, Martin Monperrus	19:30 – 19:50	
		Technical Track	**Interface Compliance of Inline Assembly: Automatically Check, Patch and Refine** Frédéric Recoules, Sébastien Bardin, Richard Bonichon, Matthieu Lemerre, Laurent Mounier, Marie-Laure Potet ***Awarded paper:*** ACM SIGSOFT Distinguished Paper Award	19:50 – 20:10	
		Technical Track	**Enabling Software Resilience in GPGPU Applications via Partial Thread Protection** Lishan Yang, Bin Nie, Adwait Jog, Evgenia Smirni	20:10 – 20:30	

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Detailed Program: May 28th

Friday, May 28th (11/11)

TIME CEST LIVE	TIME CEST MIRROR			
19:30 – 20:30	07:30 – 08:30	BLENDED SESSION	OBTAINING INFORMATION FROM ISSUES AND COMMITS Chair: Antonia Bertolino	19:30 – 20:30 07:30 – 08:30 MIRROR
		Journal First	**Automated Issue Assignment: Results and Insights from an Industrial Case** Ethem Utku Aktas, Cemal Yilmaz	19:30 – 19:50
		Journal First	**On the feasibility of automated prediction of bug and non-bug issues** Steffen Herbold, Alexander Trautsch, Fabian Trautsch	19:50 – 20:10
		Journal First	**Better Data Labelling with EMBLEM (and how that Impacts Defect Prediction)** Huy Tu, Zhe Yu, Tim Menzies	20:10 – 20:30
		JSEET	TEAM PRACTICES Chairs: Hakan Erdogmus	19:30 – 20:30 07:30 – 08:30 MIRROR
		JSEET	**Who Does What? Work Division and Allocation Strategies of Computer Science Student Teams** Anna van der Meulen and Efthimia Aivaloglou	19:30 – 19:50
		JSEET	**Assessment of a hybrid software development process for student projects: a controlled experiment** Rafal Wlodarski, Jean-Rémy Falleri and Corinne Parvéry	19:50 – 20:10
		JSEET	**Bluejay: A Cross-Tooling Audit Framework For Agile Software Teams** César García, Alejandro Guerrero, Joshua Zeitsoff, Srujay Korlakunta, Pablo Fernandez, Armando Fox and Antonio Ruiz-Cortés	20:10 – 20:30
20:30 – 21:00	---	SOCIAL	FLAMENCO LESSON & PARTY 2	20:30 – 21:00 LIVE SCHEDULE ONLY
		An online Flamenco class and party that will immerse you in the cultural experience of flamenco Read here to start preparing yourself for clapping and castanets (https://www.ishowusevilla.com/en).		
21:05 – 21:20	09:05 – 09:20	ACM SRC	ACM STUDENTS RESEARCH COMPETITION AND SCORE AWARDS Chair: Antonia Bertolino	21:05 – 21:20 09:05 – 09:20 MIRROR
21:20 – 21:45	09:20 – 09:45		CLOSING CEREMONY	21:20 – 21:45 09:20 – 09:45 MIRROR
			Laurie Williams, Natalia Juristo	

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Schedule

TECHNICAL TRACK AWARDS AND ACM EUROPE COUNCIL BEST PAPER AWARD
Tuesday, May 25th 13:45 – 14:00 (01:45 – 02:00 MIRROR)

ACM SIGSOFT OUTSTANDING RESEARCH AWARD
Tuesday, May 25th 17:50 – 18:00 (05:50 – 06:00 MIRROR)

OTHER ACM SIGSOFT AWARDS
Wednesday, May 26th 17:20 – 17:30 (05:20 – 05:30 MIRROR)

ICSE 2011 MOST INFLUENTIAL PAPER AWARD
Thursday, May 27th 13:35 – 13:45 (01:35 – 01:45 MIRROR)

OTHER ICSE AWARDS
Thursday, May 27th 17:50 – 18:00 (05:50 – 06:00 MIRROR)

IEEE TCSE HARLAN MILLS AWARD
Friday, May 28th 13:35 – 13:45 (01:35 – 01:45 MIRROR)

OTHER IEEE TCSE AWARDS
Friday, May 28th 18:20 – 18:30 (06:20 – 06:30 MIRROR)

Awardees

ACM Europe Council Best Paper Award

Zelin Zhao, Yanyan Jiang, Chang Xu, Tianxiao Gu and **Xiaoxing Ma** for their paper "Synthesizing Object State Transformers for Dynamic Software Updates".

ICSE 2021 Awards

Most Influential Paper from ICSE 2021

The Most Influential Paper Award goes to **Andrea Arcuri** and **Lionel Briand** for their ICSE 2021 paper entitled "A Practical Guide for Using Statistical Tests to Assess Randomized Algorithms in Software Engineering", addressing the key challenges of using statistical tests in software engineering.

ACM SIGSOFT Distinguished Paper Award

ATVHunter: Reliable Version Detection of Third-Party Libraries for Vulnerability Identification in Android Apps
Xian Zhan, Lingling Fan, Sen Chen, Feng Wu, Tianming Liu, Xiapu Luo, Yang Liu

Automated Query Reformulation for Efficient Search Based on Query Logs from Stack Overflow
Kaibo Cao, Chunyang Chen, Sebastian Baltes, Christoph Treude, Xiang Chen

CodeShovel: Constructing Method-Level Source Code Histories
Felix Grund, Shaiful Alam Chowdhury, Nick Bradley, Braxton Hall, Reid Holmes

Hero: On the Chaos When PATH Meets Modules
Ying Wang, Liang Qiao, Chang Xu, Yepang Liu, Shing-Chi Cheung, Na Meng, Hai Yu, Zhiliang Zhu

"How Was Your Weekend?" Software Development Teams Working From Home During COVID-19
Courtney Miller, Paige Rodeghero, Margaret-Anne Storey, Denae Ford, Thomas Zimmermann

Improving Fault Localization by Integrating Value and Predicate Based Causal Inference Techniques

Yigit Kucuk, Tim A. D. Henderson, Andy Podgurski

Interface Compliance of Inline Assembly: Automatically Check, Patch and Refine
Frédéric Recoules, Sébastien Bardin, Richard Bonichon, Matthieu Lemerre, Laurent Mounier, Marie-Laure Potet

JEST: N+1-version Differential Testing of Both JavaScript Engines and Specification
Jihyeok Park, Seungmin An, Dongjun Youn, Gyeongwon Kim, Sukyoung Ryu

Program Comprehension and Code Complexity Metrics: An fMRI Study
Norman Peitek, Sven Apel, Chris Parnin, André Brechmann, Janet Siegmund

Synthesizing Object State Transformers for Dynamic Software Updates
Zelin Zhao, Yanyan Jiang, Chang Xu, Tianxiao Gu, Xiaoxing Ma

Traceability Transformed: Generating moreAccurate Links with Pre-Trained BERT Models
Jinfeng Lin, Yalin Liu, Qingkai Zeng, Meng Jiang, Jane Cleland-Huang

What Makes a Great Maintainer of Open Source Projects?
Edson Dias, Paulo Meirelles, Fernando Castor, Igor Steinmacher, Igor Wiese, Gustavo Pinto

Why don't Developers Detect Improper Input Validation?'; DROP TABLE Papers; -
Larissa Braz, Enrico Fregnan, Gül Calikli, Alberto Bacchelli

Distinguished Artifact Award

Replication Package for Article: **Data-Oriented Differential Testing of Object-Relational Mapping Systems**
Thodoris Sotiropoulos, Stefanos Chaliasos, Vaggelis Atlidakis, Dimitris Mitropoulos, Diomidis Spinellis

Artifact for **Enhancing Genetic Improvement of Software with Regression Test Selection**
Giovani Guizzo, Justyna Petke, Federica Sarro, Mark Harman

Distinguished Reviewer Award

Gabriele Bavota, USI-Lugano, Switzerland
Maria Christakis, Max Planck Institute for Software Systems, Germany
Fabiano Dalpiaz, Utrecht University, Netherlands
Miryung Kim, University of California at Los Angeles, USA
Julia Lawall, INRIA, France
Emerson Murphy-Hill, Google, USA
Antonio Ruiz-Cortés ,University of Seville, Spain
Yulei Sui,University of Technology Sydney, Australia
Jonathan Bell, Northeastern University, USA
Myra Cohen, Iowa State University, USA
Stephanie Forrest, Arizona State University, USA
Shriram Krishnamurthi, Brown University, USA
Xiaoxing Ma, Nanjing University, China
Martin Pinzger, Alpen-Adria-Universität Klagenfurt, Austria
Kathryn Stolee, North Carolina State University, USA
Paolo Tonella, USI-Lugano, Switzerland

IEEE Software Distinguished Paper Award - Software Engineering in Practice

Industry-scale IR-based Bug Localization: A Perspective from Facebook
Vijayaraghavan Murali,Lee Gross, Rebecca Qian, Satish Chandra

Best Paper - Joint Track for Software Engineering Education and Training (JSEET)

Teaching Model-based Requirements Engineering to Industry Professionals: An Experience Report
Marian Daun, Jennifer Brings, Marcel Goger, Walter Koch, Thorsten Weyer

Software Engineering in Society Distinguished Paper Award

Awareness and Perception of Agile in Saudi Software Industry
Fahad Altuwaijri, Maria Angela Ferrario

ACM SIGSOFT 2021 Awards

ACM SIGSOFT Outstanding Research Award

The ACM SIGSOFT Outstanding Research Award goes to **Prof. Prem Devanbu** (UC Davis) "for profoundly changing the way researchers think about software by exploring connections between source code and natural language".

ACM SIGSOFT Influential Educator Award

The ACM SIGSOFT Influential Educator Award goes to **Prof. Katsuro Inoue** (Osaka University) "for his life-long foundational contributions to software engineering education and his success in connecting generations of educators and researchers from Japan with the international community"

ACM SIGSOFT Distinguished Service Award

The ACM SIGSOFT Distinguished Service Awards goes to **Prof. Tao Xie** (Peking University) "for outstanding service contributions to the software engineering community, including substantial activities on SIGSOFT history, broadening participation in software engineering, and successful chairing of technical events"

ACM SIGSOFT Impact Paper Award

The Impact Paper Award goes to the ICSE 1999 paper "Patterns of Property Specifications for Finite-State Verification" by **Matthew B. Dwyer, George S. Avrunin**, and **James C. Corbett** "for enabling widespread use of temporal logic for program verification by raising the level of abstraction to common patterns"

ACM SIGSOFT Early Career Researcher Award

The ACM SIGSOFT Early Career Researcher Award goes to **Dr. Lingming Zhang** (University of Illinois at Urbana-Champaign) "for outstanding contributions to mutation testing, regression testing, fault localization, and program repair"

ACM SIGSOFT Outstanding Doctoral Dissertation Award

The ACM SIGSOFT Outstanding Doctoral Dissertation Award goes to **Dr. August Shi** (now University of Texas at Austin) for his Dissertation "Improving Regression Testing Efficiency and Reliability via Test-Suite Transformations" (University of Illinois at Urbana-Champaign, advisor: Darko Marinov)

ACM SIGSOFT Frank Anger Memorial Award

The ACM SIGSOFT Frank Anger Memorial Award goes to Ms. **Sumaya Almanee** (UC Irvine)

IEEE Awards

Harlan D. Mills Award

The Harlan Mills Award goes to **Prof. Dieter Rombach** in recognition of his outstanding contributions and leadership in research, teaching, and technology transfer in the area of empirical software engineering.

IEEE CS TCSE Distinguished Women in Science & Engineering (WISE) Leadership Award

The IEEE CS TCSE Distinguished WISE Leadership Award goes to **Professor Sue Black** (Durham University) "for creating highly recognized and sustained programs to help women, who are not originally related to computing and technology, develop the required skills to pursue their dreams and improve their quality of lives through computer science and software engineering career paths. The impact she has generated by mentoring underprivileged women, and ever their children, is endless".

IEEE CS TCSE New Directions Award

The IEEE CS TCSE New Directions Award goes to **Professor Yuriy Brun** (University of Massachusetts) "for setting a new direction in software engineering research by defining the area of software fairness testing. His advocacy for industrial uptake of software fairness testing has attracted both funding and opportunities for real-world impact, and charted a roadmap for software engineering research in this new area".

IEEE CS TCSE Rising Star Award

The IEEE CS TCSE Rising Star Award goes to **Professor Federica Sarro** (University College London) "for her high-impact, industrially relevant research on predictive modeling for software engineering. In parallel to her research excellence, she has also made substantial contributions to the training of a large cohort of students, and to the development of improved curricula in support of this training".

Pre-Conference:

TIME CEST	Wednesday, May 19th		
23:00 – 23:30	NETWORKING	MENTORING CIRCLE Chair: Joanne M. Atlee	23:00 – 23:30 →
	ICSE 2021 will run a series of mentoring circles each led by senior software engineering researcher. Every mentoring circle has limited capacity (up to 10 mentees). The conversation can touch on any subject, and address any challenge experienced by the mentees.		

TIME CEST	Friday, May 21st		
15:00 – 15:30	NETWORKING	MENTORING CIRCLE	15:00 – 15:30 →
	ICSE 2021 will run a series of mentoring circles each led by senior software engineering researcher. Every mentoring circle has limited capacity (up to 10 mentees). The conversation can touch on any subject, and address any challenge experienced by the mentees.		

Main Conference:

TIME CEST LIVE	TIME CEST MIRROR	Tuesday, May 25th (1/2)
11:30 – 12:00	23:30 – 00:00	NETWORKING — MEET YOUR PEERS — 11:30 – 12:00 (23:30 – 00:00 LIVE EVENT) →
		In this series of speed networking events, ICSE participants can meet their academic peers **Human aspects** **AI and software engineering (AI for SE, SE for AI)** **Testing** **Program analysis** **Open (any topic)** **Software evolution and maintenance** **Requirements, design, modeling**
14:45 – 15:15	02:45 – 03:15	MEET WITH — MEET DARÍO GIL — 14:45 – 15:15 (02:45 – 03:15 MIRROR) →
		Do you want to have the opportunity to meet and chat with the Keynotes and main Awardees from ICSE 2021? We are more than sure that after their interesting and inspired talks, you would have a lot of questions and comments for them, so join their corresponding sessions to get the chance of meeting and chatting with them
		NETWORKING — INTRODUCTION TO GATHER.TOWN Chair: Fabiano Pecorelli, Davide Fucci, Carolin Brandt — 14:45 – 15:15 (02:45 – 03:15 MIRROR) →
		NETWORKING — COST ACTION NETWORK ON GENDER BALANCE Chair: Valentina Lenarduzzi — 14:45 – 15:15 (MIRROR IN MAY 26th (+32h) 22:45 – 23:15 MIRROR) →
		Gender balance in Informatics, are we there yet? We are working to support and to achieve gender balance. Which is your experience? Please share with us!
		NETWORKING — YOGA AND BREATHWORKS Chair: Birgit Penzenstadler — 14:45 – 15:15 (LIVE SCHEDULE ONLY) →
		The yoga sessions are short introductory sessions to pranayama (working with the breath), asana (stretching), and meditation. No prior knowledge required - put on some comfy clothes and find a space to relax in.
		HUAWEI — SE RESEARCH @ HUAWEI — (MIRROR SCHEDULE ONLY 02:45 – 03:15 LIVE EVENT) →
		Meeting SE Researchers at Huawei
16:15 – 16:35	04:15 – 04:35	SOCIAL — GUITAR CONCERT — 16:15 – 16:35 (04:15 – 04:35 MIRROR) →
		A live guitar micro concert (20 minutes) broadcasted by a colleague from the SE group at the Caceres University from the monumental ancient city of Caceres.

TIME CEST		Tuesday, May 25th (2/2)
LIVE	MIRROR	
19:00 – 19:30	07:00 – 07:30	MEET WITH — MEET PREM DEVANBU — 19:00 – 19:30 / 07:00 – 07:30 MIRROR →
		Do you want to have the opportunity to meet and chat with the Keynotes and main Awardees from ICSE 2021? We are more than sure that after their interesting and inspired talks, you would have a lot of questions and comments for them, so join their corresponding sessions to get the chance of meeting and chatting with them
		NETWORKING — COMMUNITY SPEED NETWORKING — 19:00 – 19:30 LIVE SCHEDULE ONLY →
		In this series of speed networking events, ICSE participants can meet their peers. **Speed Networking: Hablamos Español**
		NETWORKING — COFFEE CHAT — 19:00 – 19:30 / 07:00 – 07:30 LIVE EVENT →
		If we were meeting in person, there would be conversations around coffee tables in many different languages. To imitate this informal interaction we organise a series of chat room meetings in different languages.
		Women in Software Engineering Research — (19:00 – 19:30 and 07:00 – 07:30)
		Μιλάμε ελληνικά Eleni Constantinou — (19:00 – 19:30 ONLY)
		Falamos português! Igor Steinmacher — (19:00 – 19:30 ONLY)
		On parle français Fabio Petrillo — (19:00 – 19:30 ONLY)
		Parliamo italiano Valentina Lenarduzzi — (19:00 – 19:30 ONLY)
		Blacks in Software Engineering — (19:00 – 19:30 ONLY)
		Hablamos español José Miguel Rojas — (07:00 – 07:30 ONLY)
		NETWORKING — ICSE IS RUNNING Chairs: Luís Cruz, Ayushi Rastogi — 19:00 – 19:30 / 07:00 – 07:30 MIRROR →
		The first-ever virtual run event at ICSE! From 25-27, May 2021 AOE attendees from all over the world will run 5 km. Join us! #ICSE21isRunning
		INVENIA LABS — OPPORTUNITIES AT INVENIA LABS — 19:00 – 19:30 LIVE SCHEDULE ONLY →
		A chance to network with members of the Invenia Labs team and ask questions about what Invenia is working on.

TIME CEST		Wednesday, May 26th (1/3)
LIVE	MIRROR	
10:45 – 11:15	22:45 – 23:15	MEET WITH — MEET MICHAEL LYU — 10:45 – 11:15 (22:45 – 23:15 MIRROR) →
		Do you want to have the opportunity to meet and chat with the Keynotes and main Awardees from ICSE 2021? We are more than sure that after their interesting and inspired talks, you would have a lot of questions and comments for them, so join their corresponding sessions to get the chance of meeting and chatting with them
		NETWORKING — COFFEE CHAT — 10:45 – 11:15 (22:45 – 23:15 LIVE EVENT) →
		If we were meeting in person, there would be conversations around coffee tables in many different languages. To imitate this informal interaction we organise a series of chat room meetings in different languages. **Women in Software Engineering Research** **Hablamos español**
		NETWORKING — MENTORING CIRCLE (Chair: Abhik Roychoudhury) — 10:45 – 11:15 LIVE SCHEDULE ONLY →
		ICSE 2021 will run a series of mentoring circles each led by senior software engineering researcher. Every mentoring circle has limited capacity (up to 10 mentees). The conversation can touch on any subject, and address any challenge experienced by the mentees. This is a limited-capacity by registration only event.
		NETWORKING — YOGA AND BREATHWORKS (Chair: Birgit Penzenstadler) — 10:45 – 11:15 LIVE SCHEDULE ONLY →
		The yoga sessions are short introductory sessions to pranayama (working with the breath), asana (stretching), and meditation. No prior knowledge required - put on some comfy clothes and find a space to relax in.
		INVENIA LABS — OPPORTUNITIES AT INVENIA LABS — 10:45 – 11:15 LIVE SCHEDULE ONLY →
		A chance to network with members of the Invenia Labs team and ask questions about what Invenia is working on.
		FACEBOOK — MEET FACEBOOK RECRUITING & RESEARCH — MIRROR SCHEDULE ONLY (22:45 – 23:15 LIVE EVENT) →
		Join Ph.D and Infrastructure recruiters to learn about the research and opportunities available at Facebook
12:20 – 12:50	00:20 – 00:50	SOCIAL — FLAMENCO LESSON & PARTY 1 — 12:20 – 12:50 LIVE SCHEDULE ONLY →
		An online Flamenco class and party that will immerse you in the cultural experience of flamenco Read here to start preparing yourself for clapping and castanets (https://www.ishowusevilla.com/en).

TIME CEST		Wednesday, May 26th (2/3)
LIVE	MIRROR	
15:30 – 16:00	03:30 – 04:00	NETWORKING — MEET YOUR PEERS — 15:30 – 16:00 (03:30 – 04:00 LIVE EVENT) →
		In this series of speed networking events, ICSE participants can meet their academic peers **Postdoctoral researchers** **PhD students** **Faculty**
		NETWORKING — AST INDUSTRIAL COMPETITION — 15:30 – 16:00 LIVE SCHEDULE ONLY →
		This year the theme for AST is "Automatic Software Testing from the Trenches". In other to visualize the industrial orientation of the congress, an "industrial competition" for participants of AST 2021 will be organized. The idea is to give a very short presentation of accepted papers in AST to an industrial commission (only 3 to 5 minutes per author!) and they will select a winner analyzing its attractiveness to the industry.
		NETWORKING — MENTORING CIRCLE — Chair: Jonathan Bell *(LIVE SCHEDULE)*, Gail Murphy *(MIRROR SCHEDULE)* — 15:30 – 16:00 (03:30 – 04:00 LIVE EVENT) →
		ICSE 2021 will run a series of mentoring circles each led by senior software engineering researcher. Every mentoring circle has limited capacity (up to 10 mentees). The conversation can touch on any subject, and address any challenge experienced by the mentees. This is a limited-capacity by registration only event.
		HUAWEI — SE RESEARCH @ HUAWEI — MIRROR SCHEDULE ONLY (03:30 – 04:00 LIVE EVENT) →
		Meeting SE Researchers at Huawei
18:15 – 18:45	06:15 – 06:45	MEET WITH — MEET ELAINE WEYUKER — 18:15 – 18:45 (06:15 – 06:45 MIRROR) →
		Do you want to have the opportunity to meet and chat with the Keynotes and main Awardees from ICSE 2021? We are more than sure that after their interesting and inspired talks, you would have a lot of questions and comments for them, so join their corresponding sessions to get the chance of meeting and chatting with them
		NETWORKING — COFFEE CHAT — 18:15 – 18:45 (06:15 – 06:45 LIVE EVENT) →
		If we were meeting in person, there would be conversations around coffee tables in many different languages. To imitate this informal interaction we organise a series of chat room meetings in different languages. **Women in Software Engineering Research** **Hablamos español** **Blacks in Software Engineering**
		NETWORKING — WAIN'21 – 1st WORKSHOP ON AI ENGINEERING – SOFTWARE ENGINEERING FOR AI — Chair: Ivica Crnkovic — 18:15 – 18:45 LIVE SCHEDULE ONLY →
		WAIN'21 has brought researchers and practitioners in software engineering, data-science, and AI, to build up a community which is targeting new challenges emerging in software engineering – how to efficiently build software AI-enabled software systems.
		NETWORKING — YOU MIGHT BE STUDYING TECHNICAL DEBT AND NOT KNOW IT — Chair: Antonio Martini — 18:15 – 18:45 LIVE SCHEDULE ONLY →

TIME CEST		Wednesday, May 26th (3/3)			
LIVE	MIRROR				
18:15 – 18:45	06:15 – 06:45	NETWORKING	MENTORING CIRCLE Chair: Tao Xie	MIRROR SCHEDULE ONLY 06:15 – 06:45 LIVE EVENT	→
		ICSE 2021 will run a series of mentoring circles each led by senior software engineering researcher. Every mentoring circle has limited capacity (up to 10 mentees). The conversation can touch on any subject, and address any challenge experienced by the mentees. This is a limited-capacity by registration only event.			
		FACEBOOK	FACEBOOK LAUNCHES NEW RESEARCH AWARD OPPORTUNITY	18:15 – 18:45 LIVE SCHEDULE ONLY	→
		Join us for the launch of a research award opportunity for academia at ICSE! This request for proposals continues the research that the probability team at Facebook, led by Mark Harman, is doing to foster innovation in agent-based user interaction simulation.			

Thursday, May 27th (1/2)

TIME CEST LIVE	TIME CEST MIRROR				
11:00 – 11:30	---	NETWORKING	TAKE A COFFEE WITH THE PROGRAM CO-CHAIRS OF ICSE 2021	11:00 – 11:45 LIVE SCHEDULE ONLY	→
		Are you interested on the tasks done by the ICSE Organizing Committee? Do you want to ask questions, discuss different points of view or share ideas regarding different tasks associated to the ICSE Organizing Committee roles in a relaxed environment? Come and take a coffee with some of the OC members!			
14:30 – 15:00	02:30 – 03:00	MEET WITH	MEET ANDREA ARCURI, LIONEL BRIAND	14:30 – 15:00 02:30 – 03:00 MIRROR	→
		Do you want to have the opportunity to meet and chat with the Keynotes and main Awardees from ICSE 2021? We are more than sure that after their interesting and inspired talks, you would have a lot of questions and comments for them, so join their corresponding sessions to get the chance of meeting and chatting with them			
		NETWORKING	COFFEE CHAT	14:30 – 15:00 02:30 – 03:00 LIVE EVENT	→
		If we were meeting in person, there would be conversations around coffee tables in many different languages. To imitate this informal interaction we organise a series of chat room meetings in different languages. **Women in Software Engineering Research** **Hablamos español**			
		NETWORKING	MENTORING CIRCLE Chair: Patricia Lago	14:30 – 15:00 LIVE SCHEDULE ONLY	→
		ICSE 2021 will run a series of mentoring circles each led by senior software engineering researcher. Every mentoring circle has limited capacity (up to 10 mentees). The conversation can touch on any subject, and address any challenge experienced by the mentees. This is a limited-capacity by registration only event.			
		NETWORKING	EUROPE NEEDS STRONG SOFTWARE RESEARCH Chair: Alexander Serebrenik	14:30 – 15:00 LIVE SCHEDULE ONLY	→
		Software Engineering research is under-funded and many of us need to apply to programs targeting other topics such as cybersecurity, AI and blockchain. Joins us in requesting international and national funding agencies to acknowledge the importance of software for society and the need for increased funding of software research. Alexander Serebrenik, Paris Avgeriou, Jurgen Vinju, Marieke Huisman			
		INVENIA	OPPORTUNITIES AT INVENIA LABS	14:30 – 15:00 LIVE SCHEDULE ONLY	→
		A chance to network with members of the Invenia Labs team and ask questions about what Invenia is working on.			
		HUAWEI	SE RESEARCH @ HUAWEI	MIRROR SCHEDULE ONLY 02:30 – 03:00 LIVE EVENT	→
		Meeting SE Researchers at Huawei			
16:05 – 16:25	04:05 – 04:25	SOCIAL	VIRTUAL TRIP TO MADRID	16:05 – 16:25 04:05 – 04:25 MIRROR	→
		A colleague from the ICSE Organising Committee will broadcast live a 20 minutes walk to show you one of the tourist landmarks in Madrid: Plaza de Oriente			

Thursday, May 27th (2/2)

TIME CEST LIVE	TIME CEST MIRROR	
18:45 – 19:15	06:45 – 07:15	MEET WITH — MEET JEANNETTE WING — 18:45 – 19:15 (06:45 – 07:15 MIRROR) →
		Do you want to have the opportunity to meet and chat with the Keynotes and main Awardees from ICSE 2021? We are more than sure that after their interesting and inspired talks, you would have a lot of questions and comments for them, so join their corresponding sessions to get the chance of meeting and chatting with them
		NETWORKING — LGBTIQ+ GROUP MEETING — 18:45 – 19:15 LIVE SCHEDULE ONLY →
		Lesbian, Gay, Bisexual, Transgender, Intersexual, and Questioning (LGBTIQ) researchers and practitioners primarily come to software engineering conferences to discuss technical aspects of their work with the research community. But we are people, too, whose rights and safety are sometimes affected by the political climate. At this year's group meeting, LBGTIQ researchers, practitioners, and friends are invited to speak together to build community. We will also discuss how we fit in with our academic, industry, and governmental institutions, the current political climate around the world, and what we can do to help make all software engineering conferences and workshops to be safe and welcoming spaces for LBGTIQ members of the Software Engineering research community.
		NETWORKING — COFFEE CHAT — 18:45 – 19:15 (06:45 – 07:15 LIVE EVENT) →
		If we were meeting in person, there would be conversations around coffee tables in many different languages. To imitate this informal interaction we organise a series of chat room meetings in different languages. **Women in Software Engineering Research** **Hablamos español**
		NETWORKING — MENTORING CIRCLE — Chair: Thomas Zimmermann (*LIVE SCHEDULE*), Julia Rubin (*MIRROR SCHEDULE*) — 18:45 – 19:15 (06:45 – 07:15 LIVE EVENT) →
		ICSE 2021 will run a series of mentoring circles each led by senior software engineering researcher. Every mentoring circle has limited capacity (up to 10 mentees). The conversation can touch on any subject, and address any challenge experienced by the mentees. This is a limited-capacity by registration only event.
		NETWORKING — MEET FACEBOOK RECRUITING & RESEARCH — 18:45 – 19:15 LIVE SCHEDULE ONLY →
		Join Ph.D and Infrastructure recruiters to learn about the research and opportunities available at Facebook
20:15 – 20:45	08:15 – 08:45	NETWORKING — COMMUNITY SPEED NETWORKING — 20:15 – 20:45 LIVE SCHEDULE ONLY →
		In this series of speed networking events, ICSE participants can meet their peers. **LGBTIQ+** Andrew Begel **Blacks in Software Engineering** **Women in Software Engineering**
		NETWORKING — YOGA AND BREATHWORKS — Chair: Birgit Penzenstadler — 20:15 – 20:45 LIVE SCHEDULE ONLY →
		The yoga sessions are short introductory sessions to pranayama (working with the breath), asana (stretching), and meditation. No prior knowledge required - put on some comfy clothes and find a space to relax in.

Friday, May 28th (1/2)

TIME CEST LIVE	TIME CEST MIRROR	
10:55 – 11:25	22:55 – 23:25	NETWORKING — TAKE A COFFEE WITH THE OPEN SCIENCE CHAIR OF ICSE 2021 — 10:55 – 11:25 LIVE SCHEDULE ONLY
		Are you interested on the tasks done by the ICSE Organizing Committee? Do you want to ask questions, discuss different points of view or share ideas regarding different tasks associated to the ICSE Organizing Committee roles in a relaxed environment? Come and take a coffee with some of the OC members!
		NETWORKING — MENTORING CIRCLE — Chair: Lars Grunske — 10:55 – 11:25 LIVE SCHEDULE ONLY
		ICSE 2021 will run a series of mentoring circles each led by senior software engineering researcher. Every mentoring circle has limited capacity (up to 10 mentees). The conversation can touch on any subject, and address any challenge experienced by the mentees. This is a limited-capacity by registration only event.
		HUAWEI — SE RESEARCH @ HUAWEI — 10:55 – 11:25 LIVE SCHEDULE ONLY
		Meeting SE Researchers at Huawei
		FACEBOOK — MEET FACEBOOK RECRUITING & RESEARCH — MIRROR SCHEDULE ONLY 22:55 – 23:25 LIVE
		Join Ph.D and Infrastructure recruiters to learn about the research and opportunities available at Facebook
12:30 – 13:00	00:30 – 01:00	NETWORKING — MEET YOUR PEERS — 12:30 – 13:00 00:30 – 01.00 LIVE EVENT
		In this series of speed networking events, ICSE participants can meet their academic peers **We love dogs** **We love cats** **We Love other pets** **No pets**
		NETWORKING — ICSE IS RUNNING — Chairs: Ayushi Rastogi, Luís Cruz — 12:30 – 13:00 00:30 – 01:00 MIRROR
		The first-ever virtual run event at ICSE! From 25-27, May 2021 AOE attendees from all over the world will run 5 km. Join us! #ICSE21isRunning
14:30 – 15:00	02:30 – 03:00	MEET WITH — MEET DIETER ROMBACH — 14:30 – 15:00 02:30 – 03:00 MIRROR
		Do you want to have the opportunity to meet and chat with the Keynotes and main Awardees from ICSE 2021? We are more than sure that after their interesting and inspired talks, you would have a lot of questions and comments for them, so join their corresponding sessions to get the chance of meeting and chatting with them

Friday, May 28th (2/2)

TIME CEST LIVE	TIME CEST MIRROR			
14:30 – 15:00	02:30 – 03:00	NETWORKING	COFFEE CHAT	14:30 – 15:00 LIVE SCHEDULE ONLY →

If we were meeting in person, there would be conversations around coffee tables in many different languages. To imitate this informal interaction we organise a series of chat room meetings in different languages.

Women in Software Engineering Research

Hablamos español

14:30 – 15:00	02:30 – 03:00	NETWORKING	MENTORING CIRCLE Chair: Diomidis Spinellis	14:30 – 15:00 LIVE SCHEDULE ONLY →

ICSE 2021 will run a series of mentoring circles each led by senior software engineering researcher. Every mentoring circle has limited capacity (up to 10 mentees). The conversation can touch on any subject, and address any challenge experienced by the mentees. This is a limited-capacity by registration only event.

14:30 – 15:00	02:30 – 03:00	INVENIA	OPPORTUNITIES AT INVENIA LABS	14:30 – 15:00 LIVE SCHEDULE ONLY →

A chance to network with members of the Invenia Labs team and ask questions about what Invenia is working on.

16:05 – 16:35	04:05 – 04:35	NETWORKING	YOGA AND BREATHWORKS Chair: Birgit Penzenstadler	16:05 – 16:35 LIVE SCHEDULE ONLY →

The yoga sessions are short introductory sessions to pranayama (working with the breath), asana (stretching), and meditation. No prior knowledge required - put on some comfy clothes and find a space to relax in.

16:05 – 16:35	04:05 – 04:35	NETWORKING	TAKE A COFFEE WITH THE PROGRAM CO-CHAIRS OF ICSE 2022	16:05 – 16:35 LIVE SCHEDULE ONLY →

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16:05 – 16:35	04:05 – 04:35	NETWORKING	ICPC Chair: Alexander Serebrenik	16:05 – 16:35 LIVE SCHEDULE ONLY →

The ICPC event is video presenting the program comprehension community to the broader ICSE audience. We interview several junior and senior researchers working on different aspects of program comprehension and introduce the upcoming edition of ICPC!

18:30 – 19:30	06:30 – 07:30	NETWORKING	TOWN HALL Chairs: Thomas Zimmermann, Ladan Tahvildari	18:30 – 19:30 06:30 – 07:30 MIRROR →

Learn more about the activities of IEEE TCSE and ACM SIGSOFT. Discuss issues and share ideas on how to improve the Software Engineering community.

20:30 – 21:00	08:30 – 09:00	SOCIAL	FLAMENCO LESSON & PARTY 2	20:30 – 21:00 LIVE SCHEDULE ONLY →

An online Flamenco class and party that will immerse you in the cultural experience of flamenco
Read here to start preparing yourself for clapping and castanets (https://www.ishowusevilla.com/en).

Post-Conference:

TIME CEST	Monday, May 31st			
20:00 – 20:30	NETWORKING	MENTORING CIRCLE	20:00 – 20:30	→
	ICSE 2021 will run a series of mentoring circles each led by senior software engineering researcher. Every mentoring circle has limited capacity (up to 10 mentees). The conversation can touch on any subject, and address any challenge experienced by the mentees.			

TIME CEST	Thursday, June 3rd			
01:00 – 01:30	NETWORKING	MENTORING CIRCLE	01:00 – 01:30	→
	ICSE 2021 will run a series of mentoring circles each led by senior software engineering researcher. Every mentoring circle has limited capacity (up to 10 mentees). The conversation can touch on any subject, and address any challenge experienced by the mentees.			

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