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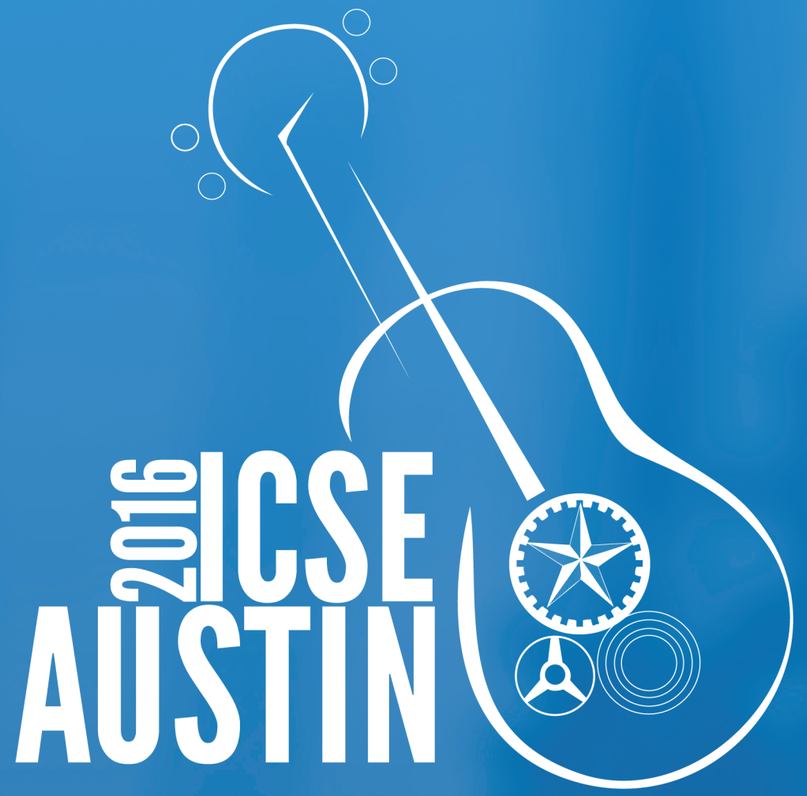

2016 ICSE AUSTIN

38th International Conference on Software Engineering Program

14-22 May 2016
Austin, Texas, USA

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ICSE 2016 Main Conference Program

	Wed 05/18	Thu 05/19	Fri 05/20	
8:30 - 10:30 AM	*Plenary Session:* – Opening – Awards I – Mary Shaw Keynote	*Plenary Session:* – Awards II – Stephen Ibaraki Keynote	*Plenary Session:* – Wolfram Schulte Keynote – Gail Murphy Keynote	GB
10:30 - 11:00 AM	BREAK - Atrium			
11:00 - 12:30 PM	Finkelstein and Herbsled Keynotes	Code Smells	Dynamic Analysis	BA
	Empirical	Architecture	Collaborative	BB
	Android	Testing I	Security	GO
	Infrastructure Support	Monitoring	Development Support	WW
	Agile	Sustainable Software Design	Tools and Toys	TR
	Performance	SRC Finalist Presentations	Posters II	SA
	Thesis in Three	Team Projects	Values in Software Engineering	SB
12:30 - 2:00 PM	LUNCH BREAK - Rio Exhibit Hall A			
2:00 - 3:30 PM	Open Source	Software Development	Software Quality	BA
	Architecture and Collaboration	Product Lines	Program Analysis	BB
	Symbolic Execution	Testing II	Maintenance	GO
	Energy and Videos	Evolution	Process	WW
	Static Analysis	Repair and Model Synthesis	Concurrency	TR
	Compilers and Emerging Trends	Analysis and Refactoring	Verification and Test	SA
	Verification and Validation I	Effort Estimation and Search	Program Understanding	SB
3:30 - 4:00 PM	BREAK - Atrium			
4:00 - 5:30 PM	Visions of 2025 and Beyond I	Visions of 2025 and Beyond II	*Plenary Session* (GB): – Awards III – Closing	BA
	API	Requirements		BB
	Defect Prediction	Debugging		GO
		Dynamic Analysis		WW
	Chaos Engineering Panel	Trending Technologies		TR
	Synthesis	Posters I		SA
	Verification and Validation II	Languages		SB
5:45 - 7:00 PM	*Town Hall Meeting* (GO)			
7:00 - 10:00 PM	*Poster Reception* (AR, GB) Ends at 9:00 PM	*Banquet*		

Exhibits (GB Foyer)
Wed 5/18 9:00 AM - 9:00 PM
Thurs 5/19 9:00 AM - 4:00 PM
Fri 5/20 9:00 AM - 4:00 PM

Community Meetings
See Page 40

Techncial Research	SEIS	Posters
SEIP	Doctoral Symposiums	ACM SRC
SEET	Demonstrations	V2025

GB = Grand Ballroom	GO = Glass Oaks	SA = San Antonio
BA = Ballroom A	WW = Wedgwood	SB = Sabine
BB = Ballroom B	TR = Trinity	AR = Arbor

ACM SRC = ACM Student Research Competition	SEIP = Software Engineering in Practice	V2025 = Visions of 2025 and Beyond
SEET = Software Engineering Education and Training	SEIS = Software Engineering in Society	

Welcome to ICSE in the Great State of Texas!

It gives us great pleasure to welcome you to the 38th International Conference in Software Engineering in the lovely Austin Arboretum area — known as "new Austin" — at the start of the Texas hill country. This setting provides an ideal backdrop for the world's leading software engineering researchers and practitioners to share cutting-edge results and visionary ideas, attend inspirational talks, and engage in lively conversation. A quarter-century after the Texas state capitol first hosted ICSE, Austin has become a hub for technology, entrepreneurship, music, outdoor recreation and nightlife. In addition to a great technical program, the ICSE week provides opportunities for you to check out what Austin has to offer and to experience Texas hospitality first hand.

The ICSE 2016 week starts Saturday, May 14 with 4 days of ICSE workshops and symposia, including a day of technical briefings on May 17. The week culminates in the 3-day main conference program May 18-20. The prestigious research track is the heart of the main conference program. However, complementing this track, half-a-dozen smaller tracks offer stimulating sessions for a variety of audiences.

Each day of the main conference features a keynote talk and the last day features two award talks. Fifteen years since **Mary Shaw** delivered a keynote on the coming-of-age of software architecture research, she will look back at the evolution of software engineering as a discipline in the ICSE opening keynote. She will take this opportunity to assess the maturity of the field and forecast the challenges ahead. Mary is the Alan J. Perlis University Professor of Computer Science in the Institute for Software Research at Carnegie Mellon University and winner of the 2014 National Medal of Technology and Innovation Award.

In the Thursday morning keynote, **Stephen Ibaraki** will delve into the exponential investor mindset. He will discuss the questions and answers required by investors in the impending digital quake, which will disrupt 80% of jobs, companies, and research; and he will explain why researchers and educators should care. Stephen is the Founding Chair of IFIP Global Industry Council / SIDO Capital.

Friday will open with two talks: Delivering the **2016 Harlan D. Mills Award talk**, **Wolfram Schulte** will reflect on challenges encountered in his roles at Microsoft, which have led him to conclude that a combination of both formal methods and empirical software engineering is the most promising approach to impact existing practice. Delivering the **Software Engineering in Practice keynote**, **Gail C. Murphy** will explore questions

around continuous adoption in software engineering practice, drawing from experiences she has gained in helping to take a research idea to market and from insights learned from interviewing industry leaders. Wolfram is director of engineering in Microsoft's Developer Division, Redmond, USA, and Gail is a Professor of Computer Science at the University of British Columbia and co-founder and Chief Scientist at Tasktop Technologies Inc.

The second award talk will take place in the Friday afternoon plenary. It will be delivered by the recipients of the **Most Influential Paper of ICSE 2006**: "Who Should Fix This Bug?," by **John Anvik**, **Lyndon Hiew** and **Gail C. Murphy**.

The **Research Paper track** got a record 530 submissions this year from 1500 authors and 46 countries. A Program Board model was used, as in 2014, whereby a Program Committee (PC) of 88 members reviewed the submissions in a first round, after which a month long discussion period ensued, overseen by the 28 Program Board (PB) members (shown below). The online discussions were very extensive with more than 6500 discussion entries and a total word count of approximately 4 copies of The Hobbit (386,000 words). The next phase of reviewing involved the PB reviewing all the papers that made it past the online discussion phase (193 papers). Lastly, the PB met in a 2-day face-to-face meeting (9-10 December in Raleigh, North Carolina, USA) where the final decisions were made on 100 papers (an additional 36 papers were accepted without discussion). In the end, 101 papers were accepted for an acceptance rate of 19%. The PB member overseeing the discussions also wrote a summary of the decisions (including points raised in discussion), which the authors received as feedback. The reviewing committees and the Program Chairs later selected 9 of the 101 accepted papers worthy of receiving **ACM Distinguished Paper awards** (marked in the conference program with a trophy symbol).

To increase author feedback and participation in the reviewing process, each paper received 3 reviews from the PC, following which the authors could write a response back to the reviewers. Authors were also asked to rate the reviews they received. The results were: Very Useful 31%, Useful 44%, Neutral 13%, Not Very Useful 9% and Not Useful At All 3%. You can find a final report with more detailed feedback on the process consisting of input from the chairs, the authors and the two reviewing committees at
http://2016.icse-conferences.org/static/downloads/2016ReviewProcess.pdf.

The ICSE 2016 Research Paper Track will also feature 7 **Journal First Papers**. This relatively new initiative allows authors of papers first published in a journal to reach a broader audience, while enriching the conference program with presentations of papers that may not fit the standard conference format. The journal first papers were jointly selected among recent journal papers by the Program Chairs and the Editors in Chief of 3 top journals in the field: ACM TOSEM, IEEE TSE, and Empirical Software Engineering.

Although the whole ICSE program targets academia and industry, software engineering practitioners have long considered the **Software Engineering in Practice (SEIP) Track** the preferred channel for exchanging concrete results and useful innovations. As usual, the competition was high: out of 108 submissions, the SEIP committee selected 28 papers and one panel. Additionally, an outstanding and well-known researcher, **Gail C. Murphy** of the University of British Columbia, is giving the SEIP keynote in which she explores various questions on software engineering in practice (see above).

A goal of the **Software Engineering Education and Training Track (SEET)** at ICSE 2016 is to explore ways of exploiting and integrating the Internet in the education and training of software engineers. From 64 paper submissions, the SEET committee selected 6 full papers and 4 short papers, including a **SEET Best Long Paper** and **SEET Best Short Paper** (marked in the conference program with a star symbol).

2016 is the second year for the **Software Engineering in Society Track (SEIS)** at ICSE. This track explicitly recognizes the role and impact of software engineering in a sustainable society. SEIS received 22 submissions of which 6 full papers were selected for presentation. In addition, two outstanding researchers in the field will be providing keynotes: **Anthony Finkelstein** from the Alan Turing Institute and University College London, currently serving as Chief Scientific Adviser to the UK Government, will be discussing how software engineering intersects with policy. **James Herbsleb**, from Carnegie Mellon University, will be talking about the scientific discipline of societal computing and how it is shaping the digital landscape.

The ICSE 2016 program features a new track entitled **Visions of 2025 and Beyond (V2025)**. This track encourages us all to think beyond our usual scope of results to what hard problems software engineering researchers will be tackling ten years from now—what will be the state-of-the-practice and the state-of-the-art for software engineering in 2025? The track received 19 submissions of which 9 were selected for presentation. V2025 is sponsored by the Computing Community Consortium, which will provide **prizes** (awarded as travel grants) for up to 3 papers in this special track: first prize $1000, second prize $750 and third prize $500. The winning papers are marked in the conference program with a ribbon symbol.

The **Poster Track** allows researchers and practitioners to present and discuss their most recent advances, ideas, experiences, and challenges in the field of software engineering. The Poster track received 38 submissions and accepted 22 of them, including one **Best Poster** and four **Distinguished Posters** (marked in the conference program by a star symbol). A **Poster Session** on Wednesday evening will provide an informal setting for attendees to discuss posters with authors. Authors of posters will also give short presentations in 2 smaller poster sessions during the main conference. Finally, the **Poster Gallery** permits online viewing of posters at http://2016.icse-conferences.org/postersGallery.

The **Demonstrations Track** allows for hands-on experience with tools and data sets. This track received 58 submissions and accepted 18. Researchers and practitioners will present live demos in the 5 Demo track sessions during the main conference, with time for discussion and for trying out tools built into the end of each session. The **Demonstrations Video Show** includes videos of the tools in action at http://2016.icse-conferences.org/videoShow.

The ICSE 2016 week includes a day of **Technical Briefings (TBs)** Tuesday before the main conference program. A TB consists of a 90-minute introduction to the state-of-the-art in an emerging topic. Of the 31 proposals received, 13 TBs were selected. Technical briefings offer an alternative model to tutorials: attendees can freely choose to attend up to four full technical briefings or move from one to another throughout the day.

Also on Tuesday, the **New Faculty Symposium (NFS)** offers a venue to those who have recently started their research careers or expect to hold a position soon. Attendees will receive advice and guidance from leading software engineering faculty and researchers. The program includes talks on key concerns such as research funding, publishing, advising and managing students, with many opportunities for informal and small group interactions.

The ICSE 2016 week includes 4 programs for students. First, through the **Doctoral Symposium (DS)**, PhD students in Software Engineering will have the opportunity to present their work to a committee of senior researchers and receive feedback. This year, 36 students submitted a research proposal to the DS. Of these, 20 were selected to attend the symposium: 8 of them will give a 30-minute talk and 12 will have lunch with the senior researchers. This year, we have also introduced a **Thesis in 3 Session** at the main Conference on Wednesday morning: 14 students will present their research in 3 minutes using 3 slides.

Second, ICSE is proud to host an **ACM Student Research Competition (SRC)**, sponsored by Microsoft. The competition received 37 submissions, of which 14 were invited to compete at ICSE. The ACM SRC program committee will select a set of finalists based on feedback from attendees and on the committee members' own assessments of the abstracts, posters, and discussions with students during the Wednesday evening Poster Session. Finalists will present their research in a morning session on Thursday. Winners will be announced at the Friday afternoon plenary session and go on to compete in the 2016 SRC Grand Finals.

A third student program, the **Student Contest on Software Engineering (SCORE)** is back at ICSE! Student teams from all over the world have been developing software projects sponsored by SCORE's program committee members. The finals will take place in parallel to the main ICSE conference, when the 3 top teams selected by the committee will present their work and compete for the overall winner award.

Finally, ICSE boasts a very robust **Student Volunteer Program**. Student volunteers play a crucial role in ensuring the success of ICSE. They help with everything from registration to local support. The 47 student volunteers at ICSE this year span the academic ranks (undergraduate through PhD). They claim 22 different nationalities and are pursuing degrees at 38 different institutions. You will see them in their ICSE 2016 t-shirts and cowboy hats while on duty. Other times, you will see them presenting their work in sessions and networking with their peers and leaders in their fields of study.

While not strictly student programs, the **NSF ICSE 2016 Travel Award Program (NSF TAP)** and the **ACM SIGSOFT Conference Attendance Program for Students (CAPS)** made it possible for many students to attend ICSE who could not have otherwise. These programs also support travel for early-career faculty and for those in need of childcare during ICSE. The NSF TAP extended travel support to 12 early career faculty and 21 students (3 undergraduate and 18 PhD students). The SIGSOFT CAPS expects to provide travel support to another 34 individuals.

The ICSE student programs—Doctoral Symposium, ACM SRC, SCORE and Student Volunteers—and the travel programs—NSF TAP and SIGSOFT CAPS—are contributing toward development of the next generation of experts in software engineering research and practice. Moreover, they aim to ensure that **this next generation is more diverse than the current generation**—inclusive of nationalities, ethnicities, and genders in closer proportions to their representation in society.

ICSE Workshops are lively interactive meetings in which participants discuss current topics in software engineering research and practice, and exchange and discuss innovative scientific and engineering ideas. ICSE Workshops often serve as incubators for emerging research areas and new scientific communities that form and share a future research agenda. This year, 23 workshops (selected from among 31 workshop proposals) will take place in the days before the main conference. Many are successful continuing workshops, while others are brand new this year.

Finally, 5 **co-located events** are being held in the days prior to the main conference:

- **ICPC 2016**: The 24th IEEE International Conference on Program Comprehension (ICPC, http://www.program-comprehension.org/icpc16/)
- **ICSSP 2016**: The International Conference on Software and System Processes (ICSSP, http://users.ece.utexas.edu/~perry/icssp2016/)
- **MSR 2016**: The 13th International Conference on Mining Software Repositories (MSR, http://2016.msrconf.org/)

- **MobileSoft 2016**: The IEEE/ACM International Conference on Mobile Software Engineering and Systems (MOBILESoft, http://mobilesoftconf.org/2016/)
- **SEAMS 2016**: The 11th International Symposium on Software Engineering for Adaptive and Self-Managing Systems (SEAMS, http://seams2016.jgreen.de/)

ICSE 2016 has benefitted from **an army of dedicated and creative people**, without whom we could not have put together this extraordinarily rich program: The authors; the chairs of the tracks; the members of the many committees; the student volunteers; and the meticulous and tireless work of those assisting with creation and administration of proceedings, web, social media, publicity, budget, registrations, and countless other activities required to orchestrate such a big event. It has been an honor and a privilege to work with this extraordinary team, and we would like to express our gratitude to each and every one of them.

Following precedent set by ICSE 2015, the **ICSE 2016 winning promotional video** was unveiled at the ICSE 2015 closing. This fun video has livened the ICSE 2016 homepage ever since. Our rendition of "Mamas Don't Let Your Babies Grow Up to Write Software" (with apologies to Willie Nelson)—fraught as it was with technical difficulties and execution problems—is testament to the good will and 'never say die' attitude of our extraordinary organizing committee members. No awards for this group on the musical front. But you can certainly find award-winning country music in Austin this week!

We would also like to express gratitude to the ICSE co-sponsors, ACM and IEEE, and to our Benefactors and Supporters—in particular, our Gold (U.S. National Science Foundation) and Silver (ARiSE - Center for Advanced Research in Software Engineering at The University of Texas at Austin, Google, Michigan State University, Microsoft, and Siemens) Benefactors. Contributions from our Benefactors and Supporters allowed us to make ICSE more affordable to all attendees without needing to sacrifice the great programs and high quality social events you have come to expect at ICSE.

Finally, we would like to thank all ICSE speakers and attendees. Enjoy your time at ICSE: renew old acquaintances and make new ones, be inspired by and provide inspiration to colleagues, take away visionary ideas and add your own into the mix.

Paraphrasing from our song at the ICSE 2015 closing: 'Austin is weird and we sure hope to keep it that way, at least that's the plan. So saddle up your pony and we'll see ya'll in Texas at ICSE in Austin this year.'
Yippie ki-yay!

Laura Dillon
Michigan State University
United States
ICSE 2016 General Chair

Willem Visser
Stellenbosch University
South Africa

Laurie Williams
North Carolina State University
United States
ICSE 2016 Program Co-Chairs

Willem Visser, Laurie Williams, Laura Dillon, William G.J. Halfond, and Will Tracz

Notable Paper Legend
🏆 = ACM SIGSOFT Distinguished Paper Award
🎖 = Visions of 2025 and Beyond Paper Award
★★ = Best Poster, Best SEIP Paper, Best SEET Full Paper
★ = Distinguished Poster, Best SEET Short Paper

Week Overview

Sat 14	Sun 15	Mon 16	Tue 17	Wed 18	Thu 19	Fri 20
MSR (Ballroom B/Wedgwood)		ICPC (Trinity/Pecos)		ICSE Main Program		
ICSSP (Sabine)		SEAMS (Glass Oaks)				
AST (Brazos)		MOBILESoft (Ballroom B/Wedgwood)				
SEHS (Pecos)		SBST (Sabine)				
CSED (Trinity)		MiSE (San Marcos)				
	FormaliSE (San Marcos)	SE4Science (Guadalupe)	Tehcnical Briefings (Rio Hall B)			
	TOSE (San Saba)	MET (Nueces)	Doctoral Symposium (Brazos)			
		CSI-SE (San Antonio)	New Faculty Symposium (San Antonio)			
	VACE (Concho)	CHASE (Pecos)	CESI (San Saba)			
	WETSoM (San Antonio)	BIGDSE (Brazos)	SEmotion (Concho)			
		GREENS (San Saba)				
		SEsCPS (Frio)	SER&IP (Nueces)			
		GAS (Concho)	Bridge (Guadalupe)			
		SESoS (Bosque)	RAISE (Bosque)			

Community Meetings
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Website: http://2016.icse-conferences.org

Mobile App: Please see proceedings for app download information

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password: conf16

Internet: SSID: ICSE
Password: ICSE2016

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Use #icse16

www.instagram.com
Use #icse16

Saturday, May 14th

Co-located Events

MSR 2016: The 13th International Conference on Mining Software Repositories
May 14-15
http:// 2016.msrconf.org/

Location: Wedgwood and Ballroom B

ICSSP 2016: International Conference on Software and System Processes
May 14-15
http://users.ece.utexas.edu/~perry/icssp2016/

Location: Sabine

Workshops

AST 2016: 11th IEEE/ACM International Workshop in Automation of Software Test
14-15 May
http://tech.brookes.ac.uk/AST2016/

Location: Brazos

SEHS 2016: International Workshop on Software Engineering in Healthcare Systems
14-15 May
http://sehc.info/sehs2016.htm

Location: Pecos

CSED 2016: International Workshop on Continuous Software Evolution and Delivery
14-15 May
http://www.continuous-se.org/CSED2016/

Location: Trinity

Breaks
AM Break: 10:30 – 11:00 AM
Location: Atrium

PM Break: 3:30 – 4:00 PM
Location: Atrium

Lunch: 12:30 – 2:00 PM
Location: Rio Exhibit Hall A

Sunday, May 15th

Co-located Events

MSR 2016: The 13th International Conference on Mining Software Repositories
May 14-15
http:// 2016.msrconf.org/

Location: Wedgwood and Ballroom B

ICSSP 2016: International Conference on Software and System Processes
May 14-15
http://users.ece.utexas.edu/~perry/icssp2016/

Location: Sabine

Workshops

AST 2016: 11th IEEE/ACM International Workshop in Automation of Software Test
May 14-15
http://tech.brookes.ac.uk/AST2016/

Location: Brazos

SEHS 2016: International Workshop on Software Engineering in Healthcare Systems
May 14-15
http://sehc.info/sehs2016.htm

Location: Pecos

CSED 2016: International Workshop on Continuous Software Evolution and Delivery
May 14-15
http://www.continuous-se.org/CSED2016/

Location: Trinity

FormaliSE 2016: 4th FME Workshop on Formal Methods in Software Engineering
May 15
http://www.formalise.org/

Location: San Marcos

TOSE 2016: 5th International Workshop on Theory-Oriented Software Engineering
May 15
https://www.cs.auckland.ac.nz/research/conferences/tose2016/

Location: San Saba

VACE 2016: 1st International Workshop on Variability and Complexity in Software Design
May 15
http://vaquita-workshop.org/vace/

Location: Concho

WETSoM 2016: 7th International Workshop on Emerging Trends in Software Metrics
May 15
http://www.agilegroup.eu/wetsom2016/

Location: San Antonio

Breaks
AM Break: 10:30 – 11:00 AM
Location: Atrium

PM Break: 3:30 – 4:00 PM
Location: Atrium

Lunch: 12:30 – 2:00 PM
Location: Rio Exhibit Hall A

Monday, May 16th

Co-located Events

ICPC 2016: International Conference on Program Comprehension
May 16-17
http://www.program-comprehension.org/icpc16/

Location: Trinity and Pecos

SEAMS 2016: 11th International Symposium on Software Engineering for Adaptive and Self-Managing Systems
May 16-17
http://seams2016.jgreen.de/

Location: Glass Oaks

MOBILESoft 2016: IEEE/ACM International Conference on Mobile Software Engineering and Systems
May 16-17
http://mobilesoftconf.org/2016/

Location: Ballroom B and Wedgwood

Workshops

SBST 2016: 9th International Workshop on Search-Based Software Testing
May 16-17
https://cse.sc.edu/~ggay/sbst2016

Location: Sabine

MiSE 2016: 8th International Workshop on Modeling in Software Engineering
May 16-17
https://sselab.de/lab2/public/wiki/MiSE

Location: San Marcos

SE4Science 2016: International Workshop on Software Engineering for Science
May 16
http://se4science.org/workshops/se4science16/

Location: Guadalupe

MET 2016: 1st International Workshop on Metamorphic Testing
May 16
http://www.cs.montana.edu/met16/

Location: Nueces

CSI-SE 2016: 3rd International Workshop on CrowdSourcing in Software Engineering
May 16
https://sites.google.com/site/2016csise/

Location: San Antonio

CHASE 2016: 9th International Workshop on Cooperative and Human Aspects of Software Engineering
May 16
http://www.chaseresearch.org/workshops/chase2016

Location: Pecos

BIGDSE 2016: 2nd International Workshop on BIG Data Software Engineering
May 16
https://sse.uni-due.de/bigdse16

Location: Brazos

Breaks

AM Break: 10:30 – 11:00 AM
Location: Atrium

PM Break: 3:30 – 4:00 PM
Location: Atrium

Lunch: 12:30 – 2:00 PM
Location: Rio Exhibit Hall A

GREENS 2016: 5th International Workshop on Green and Sustainable Software
May 16
http://greens.cs.vu.nl/

Location: San Saba

GAS 2016: 5th International Workshop on Games and Software Engineering
May 16
http://2016.gasworkshop.org/

Location: Concho

SEsCPS 2016: 2nd International Workshop on Software Engineering for Smart Cyber-Physical Systems
May 16
http://d3s.mff.cuni.cz/conferences/sescps2016/

Location: Frio

SESoS 2016: 4th International Workshop on Software Engineering for Systems-of-Systems
May 16
http://sesos2016.icmc.usp.br/

Location: Bosque

Tuesday, May 17th

Co-located Events

ICPC 2016: International Conference on Program Comprehension
May 16-17
http://www.program-comprehension.org/icpc16/

Location: Trinity and Pecos

SEAMS 2016: 11th International Symposium on Software Engineering for Adaptive and Self-Managing Systems
May 16-17
http://seams2016.jgreen.de/

Location: Glass Oaks

MOBILESoft 2016: IEEE/ACM International Conference on Mobile Software Engineering and Systems
May 16-17
http://mobilesoftconf.org/2016/

Location: Ballroom B and Wedgwood

Workshops

SBST 2016: 9th International Workshop on Search-Based Software Testing
May 16-17
https://cse.sc.edu/~ggay/sbst2016

Location: Sabine

MiSE 2016: 8th International Workshop on Modeling in Software Engineering
May 16-17
https://sselab.de/lab2/public/wiki/MiSE

Location: San Marcos

CESI 2016: 4th International Workshop on Conducting Empirical Studies in Industry
May 17
https://sites.google.com/site/cesi2016/

Location: San Saba

SEmotion 2016: 1st International Workshop on Emotional Awareness in Software Engineering
May 17
http://collab.di.uniba.it/semotion/

Location: Concho

SER&IP 2016: 3rd International Workshop on Software Engineering Research and Industrial Practice
May 17
https://sites.google.com/site/serip2016//

Location: Nueces

Bridge 2016: 1st International Workshop on Bringing Architectural Design Thinking Into Developers' Daily Activities
May 17
http://design.se.rit.edu/bridge/

Location: Guadalupe

RAISE 2016: 5th International Workshop on Realizing Artificial Intelligence Synergies in Software Engineering
May 17
http://promisedata.org/raise/2016

Location: Bosque

Breaks

AM Break: 10:30 – 11:00 AM
Location: Atrium

PM Break: 3:30 – 4:00 PM
Location: Atrium

Lunch: 12:30 – 2:00 PM
Location: Rio Exhibit Hall A

Technical Briefings
(Location: Rio Exhibit Hall B)

	Track 1	Track 2	Track 3	Track 4
9:00 - 10:30 AM	"How Not to Do It": Anti-patterns for Data Science in Software Engineering *Tim Menzies* — North Carolina State University, USA	Improving and Balancing Software Qualities *Barry Boehm* — University of Southern California, USA	Control Theory for Software Engineering *Antonio Filieri and Martina Maggio* — Imperial College London, United Kingdom; Lund University, Sweden	Software Engineering for Molecular Programming *Robyn R. Lutz and Jack H. Lutz* — Iowa State University, USA
10:30 - 11:00 AM	**BREAK**			
11:00 - 12:30 PM	Analyzing Software Engineering Experiments: Everything You Always Wanted to Know but Were Afraid to Ask *Natalia Juristo and Sira Vegas* — Universidad Politécnica de Madrid, Spain; University of Oulu, Finland	Software Release Planning *Xavier Franch and Guenther Ruhe* — Universitat Politècnica de Catalunya, Spain; University of Calgary, Canada	Logic-Based Learning in Software Engineering *Dalal Alrajeh, Alessandra Russo, Sebastian Uchitel, and Jeff Kramer* — Imperial College London, United Kingdom	
12:30 - 2:00 PM	**LUNCH BREAK**			
2:00 - 3:30 PM	Using Docker Containers to Improve Reproducibility in Software Engineering Research *Jürgen Cito and Harald C. Gall* — University of Zurich, Switzerland	Risk Assessment in Open Source Systems *Xavier Franch and Angelo Susi* — Universitat Politècnica de Catalunya, Spain; Fondazione Bruno Kessler, Italy	Rethinking Verification: Accuracy, Efficiency, and Scalability through Human-Machine Collaboration *Suraj Kothari, Ahmed Tamrawi, and Jon Mathews* — Iowa State University, USA; EnSoft Corporation, USA	
3:30 - 4:00 PM	**BREAK**			
4:00 - 5:30 PM	Software Analytics: Challenges and Opportunities *Latifa Guerrouj, Olga Baysal, David Lo, and Foutse Khomh* — École de Technologie Supérieure, Canada; Carleton University, Canada; Singapore Management University, Singapore; École Polytechnique de Montréal, Canada	The Use of Text Retrieval and Natural Language Processing in Software Engineering *Sonia Haiduc, Venera Arnaoudova, Andrian Marcus, and Giuliano Antoniol* — Florida State University, USA; Washington State University, USA; University of Texas at Dallas, USA; Polytechnique Montréal, Canada	Advances in Unit Testing: Theory and Practice *Tao Xie, Nikolai Tillmann, and Pratap Lakshman* — University of Illinois at Urbana-Champaign, USA; Microsoft, USA	

Doctoral Symposium

May 17, Tuesday (by invitation only)
Location: Brazos

Symposium Chairs
James Jones, University of California, Irvine, USA
Ita Richardson, Lero - University of Limerick, Ireland

Schedule

8:45 - 9:00 AM	**Introduction: James Jones**
9:00 - 9:30 AM	**Keynote: Jim Clause**
9:30 - 10:30 AM	**Student Presentations**
10:30 - 11:00 AM	**BREAK**
11:00 - 12:30 PM	**Student Presentations**
12:00 - 2:00 PM	**LUNCH**
2:00 - 3:30 PM	**Student Presentations**
3:30 - 4:00 PM	**BREAK**
4:00 - 5:00 PM	**Panel, Analysis, and Wrap Up**

Thesis in Three Presentations

May 18th, Wednesday, 11:00 - 12:30 PM
Location: Sabine
Listed in order by presentation.

Reducing the Test Effort of Variability-Rich Systems by Using Feature Interaction Knowledge and Variability-Aware Source Code Analysis
Stefan Fischer
— Kepler University Linz, Austria

Towards a Better Understanding of the Impact of Experimental Components on Defect Prediction Modelling
Chakkrit Tantithamthavorn
— Nara Institute of Science and Technology, Japan; Queen's University, Canada

Implications of Requirements Engineering on Software Design: A Cognitive Insight
Rahul Mohanani
— University of Oulu, Finland

Assisting Developers with License Compliance
Christopher Vendome
— The College of William and Mary, USA

Recognizing Relevant Code Elements during Change Task Navigation
Katja Kevic
— University of Zurich, Switzerland

Realistic Bug Triaging
Ali Sajedi Badashian
— University of Alberta, Canada

Spotting Design Problems with Smell Agglomerations
Leonardo da Silva Sousa
— Pontifical Catholic University of Rio de Janeiro, Brazil

Trace Link Evolution across Multiple Software Versions in Safety-Critical Systems
Mona Rahimi
— DePaul University, USA

Fixing Bug Reporting for Mobile and GUI-Based Applications
Kevin Moran
— The College of William & Mary, USA

Automatized Derivation of Comprehensive Specifications for Black-Box Services
Simon Schwichtenberg
— Paderborn University, Germany

Mining Software Process Lines
Fabian Rojas Blum
— Universidad de Chile, Chile

Ontology Learning and Its Application in Software-Intensive Projects
Jin Guo
— DePaul Univeristy, USA

Boosting Static Analysis of Android Apps through Code Instrumentation
Li Li
— University of Luxembourg, Luxembourg

Architectural-Based Speculative Analysis to Predict Bugs in a Software System
Duc Le
— University of Southern California. USA

Other Accepted Doctoral Symposium Research Proposals

Listed alphabetically by title.

A Variability Aware Configuration Management and Revision Control Platform
Lukas Linsbauer
— Johannes Kepler University, Austria

Cognitive Biases in Software Quality and Testing
Iflaah Salman
— University of Oulu, Finland

Context-Sensitive Identification of Refactoring Opportunities
Diego Cedrim
— Pontifical Catholic University of Rio de Janeiro, Brazil

Reusing Stack Traces: Automated Attack Surface Approximation
Christopher Theisen
— North Carolina State University, USA

Using Data Provenance to Improve Software Process Enactment, Monitoring, and Analysis
Gabriella Castro Barbosa Costa
— Federal University of Rio de Janeiro, Brazil; Centro Federal de Educação Tecnológica de Minas Gerais, Brazil

When More Heads Are Better than One? Understanding and Improving Collaborative Identification of Code Smells
Roberto Oliveira
— Pontifical Catholic University of Rio de Janeiro, Brazil

New Faculty Symposium

Tuesday, May 17, 8:00 - 6:00 PM

Location: San Antonio

Symposium Chairs

Margaret Burnett, Oregon State University, USA
Moonzoo Kim, KAIST, Republic of Korea

Welcome, Overview, and Introductions
Moonzoo Kim, KAIST, Republic of Korea

Obtaining Research Funding
Panelists:
Sol Greenspan, National Science Foundation, United States
Others TBA

Advising & Supervising Students
Margaret Burnett, Oregon State University, United States
Others TBA

How to Have a Life & a Career -- and Why
Carlos Jensen, Oregon State University, United States
Others TBA

Publication Strategies & How to Get a Paper Accepted
Panelists:
Betty HC Cheng, Michigan State University, United States
Jin Song Dong, National University of Singapore, China
Others TBA

Active Learning Mix; Interactive Session
Moderator:
Margaret Burnett
Contributors:
Everyone in the room

Advice from Junior Faculty/Researchers
Panelists:
Scott Fleming, University of Memphis, United States
Thomas Fritz, University of Zurich, Switzerland
Kathryn Stolee, North Carolina State University, United States

More Q&A & Final Advice; Interactive Q&A; Discussion
Moderator:
Moonzoo Kim, KAIST, Republic of Korea

Wednesday, May 18th

ICSE Opening

May 18th, Wednesday, 8:30 – 9:00 AM
Chair: Laura Dillon
Location: Grand Ballroom

Welcome Message
Sol Greenspan

Conference Introduction
Laura Dillon

Technical Program and Awards Session I
Presenters Willem Visser & Laurie Williams
See page 36 for awards presented in Awards Session I.

ICSE Keynote

May 18th, Wednesday, 9:00 – 10:30 AM
Location: Grand Ballroom

Progress Toward an Engineering Discipline of Software
Mary Shaw (Carnegie Mellon University)

Is "software engineering" really engineering? The term was coined in 1968 to call attention to problems with software production. Both theory and practice for software have evolved since then, but do we yet have a true engineering discipline? Classical engineering disciplines have emerged from craft practice and commercialization through the infusion of codified knowledge and science. Using this emergence pattern as a point of reference, I will sketch the evolution of software engineering, drawing on civil engineering and software architecture for examples that show the progressive codification of informal knowledge toward rigorous models and tools. This will provide the basis for assessing the maturity of the field and identifying our next challenges.

BREAK 10:30 – 11:00 AM (ATRIUM)

Technical Research

Android
May 18th, Wednesday, 11:00 - 12:30 PM
Session Chair: Mei Nagappan
Location: Glass Oaks

PRADA: Prioritizing Android Devices for Apps by Mining Large-Scale Usage Data
Xuan Lu, Xuanzhe Liu, Huoran Li, Tao Xie, Qiaozhu Mei, Dan Hao, Gang Huang, and Feng Feng
— Peking University, China; University of Illinois at Urbana-Champaign, USA; University of Michigan, USA; Wandoujia Lab, China

Release Planning of Mobile Apps Based on User Reviews
Lorenzo Villarroel, Gabriele Bavota, Barbara Russo, Rocco Oliveto, and Massimiliano Di Penta
— Free University of Bozen-Bolzano, Italy; University of Molise, Italy; University of Sannio, Italy

Toward a Framework for Detecting Privacy Policy Violations in Android Application Code
Rocky Slavin, Xiaoyin Wang, Mitra Bokaei Hosseini, James Hester, Ram Krishnan, Jaspreet Bhatia, Travis D. Breaux, and Jianwei Niu
— University of Texas at San Antonio, USA; University of Texas at Dallas, USA; Carnegie Mellon University, USA

Mining Sandboxes
Konrad Jamrozik, Philipp von Styp-Rekowsky, and Andreas Zeller
— Center for IT-Security, Privacy and Accountability (CISPA), Germany

Technical Research

Performance
May 18th, Wednesday, 11:00 - 12:30 PM
Session Chair: Antonio Filieri
Location: San Antonio

Generating Performance Distributions via Probabilistic Symbolic Execution
Bihuan Chen, Yang Liu, and Wei Le
— Nanyang Technological University, Singapore; Iowa State University, USA

Performance Issues and Optimizations in JavaScript: An Empirical Study
Marija Selakovic and Michael Pradel
— TU Darmstadt, Germany

Reliability of Run-Time Quality-of-Service Evaluation Using Parametric Model Checking
Guoxin Su, David S. Rosenblum, and Giordano Tamburrelli
— National University of Singapore, Singapore; BESTSELLER E-commerce, The Netherlands

Optimizing Selection of Competing Services with Probabilistic Hierarchical Refinement
Tian Huat Tan, Manman Chen, Jun Sun, Yang Liu, Étienne André, Yinxing Xue, and Jin Song Dong
— Singapore University of Technology and Design, Singapore; National University of Singapore, Singapore; Université Paris 13, France; Nanyang Technological University, Singapore

Technical Research
Empirical
May 18th, Wednesday, 11:00 - 12:30 PM
Session Chair: Ayse Bener
Location: Ballroom B

The Emerging Role of Data Scientists on Software Development Teams
Miryung Kim, Thomas Zimmermann, Robert DeLine, and Andrew Begel
— UCLA, USA; Microsoft Research, USA

Belief & Evidence in Empirical Software Engineering
Premkumar Devanbu, Thomas Zimmermann, and Christian Bird
— University of California, Davis, USA; Microsoft Research, USA

Grounded Theory in Software Engineering Research: A Critical Review and Guidelines
Klaas-Jan Stol, Paul Ralph, and Brian Fitzgerald
— Lero — The Irish Software Research Centre, Ireland; University of Auckland, New Zealand

Open Innovation in Software Engineering: A Systematic Mapping Study
Hussan Munir, Krzysztof Wnuk, and Per Runeson
— Lund University, Sweden

Doctoral Symposium
Thesis in Three
May 18th, Wednesday, 11:00 - 12:30 PM
Session Chair: Ita Richardson
Location: Sabine

See page 14 for the Doctoral Symposium Thesis in Three presentations.

Software Engineering In Practice
Infrastructure Support
May 18th, Wednesday, 11:00 - 12:30 PM
Session Chair: Diomidis Spinellis
Location: Wedgwood

CloudBuild: Microsoft's Distributed and Caching Build Service
Hamed Esfahani, Jonas Fietz, Qi Ke, Alexei Kolomiets, Erica Lan, Erik Mavrinac, Wolfram Schulte, Newton Sanches, and Srikanth Kandula
— Microsoft, USA; Microsoft, Switzerland

★★Continuous Deployment at Facebook and OANDA
Tony Savor, Mitchell Douglas, Michael Gentili, Laurie Williams, Kent Beck, and Michael Stumm
— Facebook, USA; Stanford University, USA; OANDA Corporation, USA; North Carolina State University, USA; University of Toronto, Canada

An Empirically Developed Method to Aid Decisions on Architectural Technical Debt Refactoring: AnaConDebt
Antonio Martini and Jan Bosch
— Chalmers University of Technology, Sweden

Trustworthiness in Enterprise Crowdsourcing: A Taxonomy & Evidence from Data
Anurag Dwarakanath, Shrikanth N.C., Kumar Abhinav, and Alex Kass
— Accenture Technology Labs, India; IIIT-Delhi, India; Accenture Technology Labs, USA

Software Engineering Education and Training
Agile
May 18th, Wednesday, 11:00 - 12:30 PM
Session Chair: Janet Burge
Location: Trinity

Learning Agile Software Development in High School: An Investigation
Marcello Missiroli, Daniel Russo, and Paolo Ciancarini
— University of Modena and Reggio Emilia, Italy; University of Bologna, Italy

★★Teaching Agile - Addressing the Conflict between Project Delivery and Application of Agile Methods
Jan-Philipp Steghöfer, Eric Knauss, Emil Alégroth, Imed Hammouda, Håkan Burden, and Morgan Ericsson
— University of Gothenburg, Sweden; Chalmers University, Sweden; Viktoria Swedish ICT, Sweden; Linneus University, Sweden

How Surveys, Tutors and Software Help to Assess Scrum Adoption in a Classroom Software Engineering Project
Christoph Matthies, Thomas Kowark, Keven Richly, Matthias Uflacker, and Hasso Plattner
— Hasso Plattner Institute, University of Potsdam, Germany

Metrics in Agile Project Courses
Lukas Alperowitz, Dora Dzvonyar, and Bernd Bruegge
— Technical University of Munich, Germany

Software Engineering In Society
Keynotes
May 18th, Wednesday, 11:00 - 12:30 PM
Session Chair: Diomidis Spinellis
Location: Ballroom A

Software Engineering and Policy
Anthony Finkelstein
— The Alan Turing Institute, United Kingdom

The Scientific Discipline of Societal Computing: Shaping the Digital Landscape
Jim Herbsleb
— Carnegie Mellon University, USA

LUNCH 12:30 – 2:00 PM (RIO EXHIBIT HALL A)

Technical Research
Symbolic Execution
May 18th, Wednesday, 2:00 - 3:30 PM
Session Chair: Cristian Cadar
Location: Glass Oaks

🏆On the Techniques We Create, the Tools We Build, and Their Misalignments: A Study of KLEE
Eric F. Rizzi, Sebastian Elbaum, and Matthew B. Dwyer
— Grammatech Inc., USA; University of Nebraska - Lincoln, USA

🏆Guiding Dynamic Symbolic Execution toward Unverified Program Executions
Maria Christakis, Peter Müller, and Valentin Wüstholz
— ETH Zurich, Switzerland

Synthesizing Framework Models for Symbolic Execution
Jinseong Jeon, Xiaokang Qiu, Jonathan Fetter-Degges, J effrey S. Foster, and Armando Solar-Lezama
— University of Maryland, USA; Massachusetts Institute of Technology, USA

Type-Aware Concolic Testing of JavaScript Programs
Monika Dhok, Murali Krishna Ramanathan, and Nishant Sinha
— Indian Institute of Science, India; IBM Research, India

Technical Research
Compilers and Emerging Trends
May 18th, Wednesday, 2:00 - 3:30 PM
Session Chair: Bernd Fischer
Location: San Antonio

An Empirical Comparison of Compiler Testing Techniques
Junjie Chen, Wenxiang Hu, Dan Hao, Yingfei Xiong, Hongyu Zhang, Lu Zhang, and Bing Xie
— Peking University, China; Microsoft Research, China

🏆Termination-Checking for LLVM Peephole Optimizations
David Menendez and Santosh Nagarakatte
— Rutgers University, USA

Finding and Analyzing Compiler Warning Defects
Chengnian Sun, Vu Le, and Zhendong Su
— University of California, Davis, USA

iDice: Problem Identification for Emerging Issues
Qingwei Lin, Jian-Guang Lou, Hongyu Zhang, and Dongmei Zhang
— Microsoft Research, China

Technical Research
Energy and Videos
May 18th, Wednesday, 2:00 - 3:30 PM
Session Chair: Denys Poshyvanyk
Location: Wedgwood

🏆Energy Profiles of Java Collections Classes
Samir Hasan, Zachary King, Munawar Hafiz, Mohammed Sayagh, Bram Adams, and Abram Hindle
— Auburn University, USA; Polytechnique Montreal, Canada; University of Alberta, Canada

An Empirical Study of Practitioners' Perspectives on Green Software Engineering
Irene Manotas, Christian Bird, Rui Zhang, David Shepherd, Ciera Jaspan, Caitlin Sadowski, Lori Pollock, and James Clause
— University of Delaware, USA; Microsoft Research, USA; IBM Research - Almaden, USA; ABB Corporate Research, USA; Google, Inc., USA

Automated Energy Optimization of HTTP Requests for Mobile Applications
Ding Li, Yingjun Lyu, Jiaping Gui, and William G. J. Halfond
— University of Southern California, USA

Too Long; Didn't Watch! Extracting Relevant Fragments from Software Development Video Tutorials
Luca Ponzanelli, Gabriele Bavota, Andrea Mocci, Massimiliano Di Penta, Rocco Oliveto, Mir Hasan, Barbara Russo, Sonia Haiduc, and Michele Lanza
— Università della Svizzera Italiana, Switzerland; Free University of Bozen-Bolzano, Italy; University of Sannio, Italy; University of Molise, Italy; Florida State University, USA

Technical Research

Open Source
May 18th, Wednesday, 2:00 - 3:30 PM
Session Chair: Anita Sarma
Location: Ballroom A

Overcoming Open Source Project Entry Barriers with a Portal for Newcomers
Igor Steinmacher, Tayana Uchoa Conte, Christoph Treude, and Marco Aurélio Gerosa
— Federal University of Technology – Paraná, Brazil; Federal University of Amazonas, Brazil; Institute of Mathematics and Statistics University of Sao Paulo, Brazil

🏆Work Practices and Challenges in Pull-Based Development: The Contributor's Perspective
Georgios Gousios, Margaret-Anne Storey, and Alberto Bacchelli
— Radboud University Nijmegen, The Netherlands; University of Victoria, Canada; Delft University of Technology, The Netherlands

From Aristotle to Ringelmann: A Large-Scale Analysis of Team Productivity and Coordination in Open Source Software Projects
Ingo Scholtes, Pavlin Mavrodiev, and Frank Schweitzer
— ETH Zürich, Switzerland

Inflow and Retention in OSS Communities with Commercial Involvement: A Case Study of Three Hybrids
Minghui Zhou, Audris Mockus, Xiujuan Ma, Zhang, Lu, and Hong Mei
— Peking University, China; University of Tennessee, USA; National Institute of Network and Information Security Beijing, China

Software Engineering In Practice

Static Analysis
May 18th, Wednesday, 2:00 - 3:30 PM
Session Chair: Yves Le Traon
Location: Trinity

Practical Programming, Validation and Verification with Finite-State Machines: A Library and Its Industrial Application
Paulo Salem
— Salem Sistemas, Brazil

Battles with False Positives in Static Analysis of JavaScript Web Applications in the Wild
Joonyoung Park, Inho Lim, and Sukyoung Ryu
— KAIST, The Republic of Korea; Samsung Electronics, The Republic of Korea

Detecting Problems in the Database Access Code of Large Scale Systems - An Industrial Experience Report
Tse-Hsun Chen, Weiyi Shang, Ahmed E. Hassan, Mohamed Nasser, and Parminder Flora
— Queen's University, Canada; Concordia University, Canada; BlackBerry, Canada

Engineering the Servo Web Browser Engine Using Rust
Brian Anderson, Lars Bergstrom, Manish Goregaokar, Josh Matthews, Keegan McAllister, Jack Moffitt, and Simon Sapin
— Mozilla Research, USA; Indian Institute of Technology Bombay, India; Mozilla, Canada

Software Engineering Education and Training

Architecture and Collaboration
May 18th, Wednesday, 2:00 - 3:30 PM
Session Chair: Mehdi Mirakhorli
Location: Ballroom B

Smart Decisions: An Architectural Design Game
Humberto Cervantes, Serge Haziyev, Olha Hrytsay, and Rick Kazman
— Universidad Autonoma Metropolitana - Iztapalapa Mexico; Softserve, Inc., USA; Software Engineering Institute, Carnegie-Mellon University and University of Hawaii, USA

Reflections on Applying Constructive Alignment with Formative Feedback for Teaching Introductory Programming and Software Architecture
Andrew Cain and Muhammad Ali Babar
— Swinburne University of Technology, Australia; The University of Adelaide, Australia

Software Security Education at Scale
Christopher Theisen, Laurie Williams, Kevin Oliver, and Emerson Murphy-Hill
— North Carolina State University, USA

What Makes Teaching Software Architecture Difficult?
Matthias Galster and Samuil Angelov
— University of Canterbury, New Zealand; Fontys University of Applied Sciences, The Netherlands

★Collaborative Software Engineering Education between College Seniors and Blind High School Students
Collin McMillan and Amanda Rodda-Tyler
— University of Notre Dame, USA; Illinois School for the Visually Impaired, USA

Demonstrations

Verification and Validation I
May 18th, Wednesday, 2:00 - 3:30 PM
Session Chair: Aditya Nori
Location: Sabine

SimCoTest: A Test Suite Generation Tool for Simulink/Stateflow Controllers
Reza Matinnejad, Shiva Nejati, Lionel C. Briand, and Thomas Bruckmann
— University of Luxembourg, Luxembourg; Delphi Automotive Systems, Luxembourg

SMACK Software Verification Toolchain
Montgomery Carter, Shaobo He, Jonathan Whitaker, Zvonimir Rakamaric, and Michael Emmi
— University of Utah, USA; IMDEA Software Institute, Spain

FOREPOST: A Tool for Detecting Performance Problems with Feedback-Driven Learning Software Testing
Qi Luo, Denys Poshyvanyk, Aswathy Nair, and Mark Grechanik
— The College of William and Mary, USA; University of Illinois at Chicago, USA

BREAK 3:30-4:00 PM (ATRIUM)

Technical Research
Defect Prediction
May 18th, Wednesday, 4:00 - 5:30 PM
Session Chair: Pete Rotella
Location: Glass Oaks

Automatically Learning Semantic Features for Defect Prediction
Song Wang, Taiyue Liu, and Lin Tan
— University of Waterloo, Canada

Cross-Project Defect Prediction Using a Connectivity-Based Unsupervised Classifier
Feng Zhang, Quan Zheng, Ying Zou, and Ahmed E. Hassan
— Queen's University, Canada

Automated Parameter Optimization of Classification Techniques for Defect Prediction Models
Chakkrit Tantithamthavorn, Shane McIntosh, Ahmed E. Hassan, and Kenichi Matsumoto
— Nara Institute of Science and Technology, Japan; McGill University, Canada; Queen's University, Canada

AntMiner: Mining More Bugs by Reducing Noise Interference
Bin Liang, Pan Bian, Yan Zhang, Wenchang Shi, Wei You, and Yan Cai
— Renmin University, China; Chinese Academy of Sciences, China

Technical Research
Synthesis
May 18th, Wednesday, 4:00 - 5:30 PM
Session Chair: Victor Braberman
Location: San Antonio

Program Synthesis Using Natural Language
Aditya Desai, Sumit Gulwani, Vineet Hingorani, Nidhi Jain, Amey Karkare, Mark Marron, Sailesh R, and Subhajit Roy
— IIT Kanpur, India; MSR Redmond, USA

SWIM: Synthesizing What I Mean - Code Search and Idiomatic Snippet Synthesis
Mukund Raghothaman, Yi Wei, and Youssef Hamadi
— University of Pennsylvania, USA; Microsoft Research, United Kingdom; École Polytechnique, Palaiseau, France

Cross-Supervised Synthesis of Web-Crawlers
Adi Omari, Sharon Shoham, and Eran Yahav
— Technion - Israel Institute of Technology, Israel; Academic College of Tel Aviv Yaffo, Israel

Automatic Model Generation from Documentation for Java API Functions
Juan Zhai, Jianjun Huang, Shiqing Ma, Xiangyu Zhang, Lin Tan, Jianhua Zhao, and Feng Qin
— Nanjing University, China; Ohio State University, USA

Technical Research
API
May 18th, Wednesday, 4:00 - 5:30 PM
Session Chair: Max DiPenta
Location: Ballroom B

Augmenting API Documentation with Insights from Stack Overflow
Christoph Treude and Martin P. Robillard
— University of Adelaide, Australia; McGill University, Canada

🏆From Word Embeddings to Document Similarities for Improved Information Retrieval in Software Engineering
Xin Ye, Hui Shen, Xiao Ma, Razvan Bunescu, and Chang Liu
— Ohio University, USA

Learning API Usages from Bytecode: A Statistical Approach
Tam The Nguyen, Hung Viet Pham, Phong Minh Vu, and Tung Thanh Nguyen
— Utah State University, USA

A Field Study of How Developers Locate Features in Source Code
Kostadin Damevski, David Shepherd, and Lori Pollock
— Virginia State University, USA; ABB, USA; University of Delaware, USA

V2025

Visions of 2025 and Beyond I
May 18th, Wednesday, 4:00 - 5:30 PM
Session Chairs: Gail Murphy
and David Rosenblum
Location: Ballroom A

Wide-Field Ethnography: Studying Software Engineering in 2025 and Beyond
David Socha, Robin Adams, Kelly Franznick, Wolff-Michael Roth, Kevin Sullivan, Josh Tenenberg, and Skip Walter
— University of Washington Bothell, USA; Purdue University, USA; Blink UX, USA; University of Victoria, Canada; University of Virginia, USA; University of Washington Tacoma, USA; Factor, Inc., USA

Code Drones
Mithun P. Acharya, Chris Parnin, Nicholas A. Kraft, Aldo Dagnino, and Xiao Qu
— ABB Corporate Research, USA; North Carolina State University, USA

Exploring Process Improvement Decisions to Support a Rapidly Evolving Developer Base
Erika S. Mesh, David M. Tolar, and J. Scott Hawker
— Rochester Institute of Technology, USA

Continuous Validation for Data Analytics Systems
Mark Staples, Liming Zhu, and John Grundy
— Data61, CSIRO and NICTA, Australia; Deakin University, Australia

COPE: Vision for a Change-Oriented Programming Environment
Danny Dig, Ralph Johnson, Darko Marinov, Brian Bailey, and Don Batory
— Oregon State University, USA; University of Illinois, USA; University of Texas, USA

Software Engineering In Practice

Panel Discussion
May 18th, Wednesday, 4:00 - 5:30 PM
Session Chairs: Lorin Hochstein
and Aaron Blohowiak
Location: Trinity

Chaos Engineering Panel
Heather Nakama, Microsoft, USA
Kyle Parrish, Fidelity Investments, USA
Ian Van Hoven, Yahoo, USA
Chris Adams, Uber, USA

Demonstrations

Verification and Validation II
May 18th, Wednesday, 4:00 - 5:30 PM
Session Chair: Aditya Nori
Location: Sabine

SourcererCC and SourcererCC-I: Tools to Detect Clones in Batch Mode and during Software Development
Vaibhav Saini, Hitesh Sajnani, Jaewoo Kim, and Cristina Lopes
— University of California, Irvine, USA

Visually Reasoning about System and Resource Behavior
Tony Ohmann, Ryan Stanley, Ivan Beschastnikh, and Yuriy Brun
— University of Massachusetts, USA; University of British Columbia, Canada

Toward Arbitrary Mapping for Debugging Visualizations
Yung-Pin Cheng, Chiu-Yu Ku, Wei-Chen Pan, Chuan Yang, and Ting-Shu Lin
— National Central University, Taiwan; Synopsys, Inc., Taiwan

FUSION: A Tool for Facilitating and Augmenting Android Bug Reporting
Kevin Moran, Mario Linares-Vásquez, Carlos Bernal-Cárdenas, and Denys Poshyvanyk
— College of William & Mary, USA

BREAK 5:30-6:00 PM

ACM SIGSOFT / IEEE CS TCSE Town Hall Meeting

May 18th, Wednesday, 5:45 - 7:00 PM
Location: Glass Oaks

ICSE 2016 Poster Reception

May 18th, Wednesday, 7:00 - 9:00 PM

Location: Atrium

ACM Student Research Competition

Causal Impact for App Store Analysis
William Martin
— University College London, United Kingdom

Identifying Successful Strategies for Resolving Static Analysis Notifications
Justin Smith
— North Carolina State University, USA

Do Biases Related to Geographical Location Influence Work-Related Decisions in GitHub?
Ayushi Rastogi
— IIIT-Delhi, India

Safely Evolving Preprocessor-Based Configurable Systems
Flávio Medeiros
— Federal University of Campina Grande

Discovering Important Source Code Terms
Paige Rodeghero
— University of Notre Dame, USA

Scaling Testing of Refactoring Engines
Melina Mongiovi
— Federal University of Campina Grande, Brazil

RDIT - Race Detection from Incomplete Traces
Arun Krishnakumar Rajagopalan
— Texas A&M University, USA

Towards Better Program Obfuscation: Optimization via Language Models
Han Liu
— Tsinghua University, China

An Empirical Study of Blindness and Program Comprehension
Ameer Armaly
— University of Notre Dame, USA

Maximally Stateless Model Checking for Concurrent Bugs under Relaxed Memory Models
Alan Huang
— Texas A&M University, USA

FSMdroid: Guided GUI Testing of Android Apps
Ting Su
— East China Normal University, China

Instantaneous Performance Bug Detection in IDE
Shanshan Li
— Texas A&M University, USA

Code Parallelization through Sequential Code Search
Bowen Cai
— Texas A&M University, USA

Student Contest on Software Engineering Finalist Projects

MeetMe, A Meeting Planner
Manuel Gollmann, Danny Friedrich, Natascha Kania, Ronald Robertson, and Malte Kloß
— University of Applied Sciences Neu-Ulm, Germany

CoCo: A Code Coach
Sophia Stahl, Jan Pawellek, Dominik Sterk, and Julia Kreutzer
— Heidelberg University, Germany

Agile TweetViz
Kedar Pitke, Aditya Bivalkar, Tanmay Patil, Meenal Kulkarni, and Snehal Shendware
— Arizona State University, USA

ICSE Posters

Posters I
May 19th, Thursday, 4:00 - 5:30 PM
Session Chairs: James Clause and Dimitra Giannakopoulou
Location: San Antonio

Extracting Conceptual Interoperability Constraints from API Documentation Using Machine Learning
Hadil Abukwaik, Mohammed Abujayyab, Shah Rukh Humayoun, and Dieter Rombach
— University of Kaiserslautern, Germany

Technical Debt Prioritization Using Predictive Analytics
Zadia Codabux and Byron J. Williams
— Mississippi State University, USA

Recommending Developers with Supplementary Information for Issue Request Resolution
Hui Yang, Xiaobing Sun, Bin Li, and Jiajun Hu
— Yangzhou University, China; Nanjing University, China

A New Homogeneous Pure Birth Process Based Software Reliability Model
Nestor Ruben Barraza
— Universidad Nacional de Tres de Febrero, Argentina

On the Effectiveness of Labeled Latent Dirichlet Allocation in Automatic Bug-Report Categorization
Minhaz F. Zibran
— University of New Orleans, USA

On the Reduction of Verbose Queries in Text Retrieval Based Software Maintenance
Oscar Chaparro and Andrian Marcus
— The University of Texas at Dallas, USA

Security Expert Recommender in Software Engineering
Shahab Bayati
— University of Auckland, New Zealand

Towards Promoting Design and UML Modeling Practices in the Open Source Community
Abdullah Aldaeej and Omar Badreddin
— State University of New York at Albany, USA; Northern Arizona University, USA

Applying Scrum to the Army - A Case Study
Luigi Benedicenti, Franco Cotugno, Paolo Cianfrini, Angelo Messina, Witold Pedrycz, Alberto Sillitti, and Giancarlo Succi
— University of Regina, Canada; Italian Army General Staff and DSSEA, Italy; Universitö di Bologna, Italy; University of Alberta, Canada; Center for Applied Software Engineering, Italy; Innopolis University, Russian Federation

Making a Difference: An Overview of Humanitarian Free Open Source Systems
Esteban Parra, Sonia Haiduc, and Rebecca James
— Florida State University, USA

ICSE Posters

Posters II
May 20th, Friday, 11:00 - 12:30 PM
Session Chairs: James Clause and Dimitra Giannakopoulou
Location: San Antonio

A New Thread-Aware Birthmark for Plagiarism Detection of Multithreaded Programs
Zhenzhou Tian, Ting Liu, Qinghua Zheng, Feifei Tong, Ming Fan, and Zijiang Yang
— Xi'an Jiaotong University, China; Western Michigan University, USA

★When to Release in Open Source Project?
Zeheng Li and LiGuo Huang
— Southern Methodist University, USA

★Topsy-Turvy: A Smarter and Faster Parallelization of Mutation Analysis
Rahul Gopinath, Carlos Jensen, and Alex Groce
— Oregon State University, USA

Mobile Malware Detection in the Real World
Francesco Mercaldo, Corrado Aaron Visaggio, Gerardo Canfora, and Aniello Cimitile
— University of Sannio, Italy

★★Continuous Assessment of Software Traceability
Patrick Rempel and Patrick Mäder
— Technische Universität Ilmenau, Germany

Characterizing API Elements in Software Documentation with Vector Representation
Thanh Van Nguyen, Anh Tuan Nguyen, and Tien N. Nguyen
— Iowa State University, USA

Guiding the Crowds for Android Testing
Xin Zhang, Zhenyu Chen, Chunrong Fang, and Zicong Liu
— Nanjing University, China

Assessing Iterative Practical Software Engineering Courses with Play Money
Kai Mindermann, Jan-Peter Ostberg, and Stefan Wagner
— University of Stuttgart, Germany

Mapping API Elements for Code Migration with Vector Representations
Trong Duc Nguyen, Anh Tuan Nguyen, and Tien N. Nguyen
— Iowa State University, USA

★Candoia: A Platform and Ecosystem for Mining Software Repositories Tools
Nitin M Tiwari, Ganesha Upadhyaya, and Hridesh Rajan
— Iowa State University, USA

★Debugging Reactive Programming with Reactive Inspector
Guido Salvaneschi and Mira Mezini
— Technical University of Darmstadt, Germany

Thursday, May 19th

Awards Session II

May 19th, Thursday, 8:30 – 9:00 AM
Session chair: Laurie Williams
Location: Grand Ballroom
See page 37 for awards presented in Award Session II.

Keynote

May 19th, Thursday, 9:00 – 10:30 AM
Location: Grand Ballroom

Investing in the Impending Digital Quake—80% Jobs/Companies/Research Disrupted?
Stephen Ibaraki (Founding Chair IFIP Global Industry Council / SIDO Capital, Canada)

The innovation and start-up investment community want to fund SMART research and education leading to sustainable global impact however the impending digital quake triggered by discoveries in multiple domains will disrupt 80% of the world as we know it. Moreover, all domains (science, education, research, entrepreneurship/startups, funding/investments, government, industry, business, media, civil society (non-profits), ...) are connected through their underlying dependence upon computing catalyzed by software engineering. Thus in the exponential investor mindset, what are these global trends/disruptions and daily discoveries that will change all of our lives in every way possible? What are the implications in your work? How is the industry and start-up landscape radically changing and why should you care in your research or education focus? What are the triggers to get investment? Why does having an eclectic understanding of innovation in multiple-domains matter?

BREAK 10:30 – 11:00 AM (ATRIUM)

Technical Research
Code Smells
May 19th, Thursday, 11:00 - 12:30 PM
Session Chair: Lutz Prechelt
Location: Ballroom A

On the "Naturalness" of Buggy Code
Baishakhi Ray, Vincent Hellendoorn, Saheel Godhane, Zhaopeng Tu, Alberto Bacchelli, and Premkumar Devanbu
— University of Virginia, USA; University of California, Davis, USA; Huawei Technologies Co. Ltd., China; Delft University of Technology, The Netherlands

Code Anomalies Flock Together: Exploring Code Anomaly Agglomerations for Locating Design Problems
Willian Oizumi, Alessandro Garcia, Leonardo da Silva Sousa, Bruno Cafeo, and Yixue Zhao
— Pontifical Catholic University of Rio de Janeiro, Brazil; University of Southern California, USA

Using (Bio)Metrics to Predict Code Quality Online
Sebastian C. Müller and Thomas Fritz
— University of Zurich, Switzerland

CUSTODES: Automatic Spreadsheet Cell Clustering and Smell Detection Using Strong and Weak Features
Shing-Chi Cheung, Wanjun Chen, Yepang Liu, and Chang Xu
— The Hong Kong University of Science and Technology, China; Nanjing University, China

Technical Research
Architecture
May 19th, Thursday, 11:00 - 12:30 PM
Session Chair: Henry Muccini
Location: Ballroom B

Disseminating Architectural Knowledge on Open-Source Projects: A Case Study of the Book "Architecture of Open-Source Applications"
Martin P. Robillard and Nenad Medvidovic
— McGill University, Canada; University of Southern California, USA

Identifying and Quantifying Architectural Debt
Lu Xiao, Yuanfang Cai, Rick Kazman, Ran Mo, and Qiong Feng
— Drexel University, USA; University of Hawaii & SEI/CMU, USA

Decoupling Level: A New Metric for Architectural Maintenance Complexity
Ran Mo, Yuanfang Cai, Rick Kazman, Lu Xiao, and Qiong Feng
— Drexel University, USA; University of Hawaii & SEI/CMU, USA

Evaluating the Effects of Architectural Documentation: A Case Study of a Large Scale Open Source Project
Rick Kazman, Dennis Goldenson, Ira Monarch, William Nichols, and Giuseppe Valetto
— Carnegie Mellon University, USA; University of Hawaii, USA; Fondazione Bruno Kessler, Italy

Technical Research
Testing 1
May 19th, Thursday, 11:00 - 12:30 PM
Session Chair: Moonzoo Kim
Location: Glass Oaks

On The Limits of Mutation Reduction Strategies
Rahul Gopinath, Mohammad Amin Alipour, Iftekhar Ahmed, Carlos Jensen, and Alex Groce
— Oregon State University, USA

Comparing White-Box and Black-Box Test Prioritization
Christopher Henard, Mike Papadakis, Mark Harman, Yue Jia, and Yves Le Traon
— University of Luxembourg, Luxembourg; University College London, United Kingdom

How Does Regression Test Prioritization Perform in Real-World Software Evolution?
Yafeng Lu, Yiling Lou, Shiyang Cheng, Lingming Zhang, Dan Hao, Yangfan Zhou, and Lu Zhang
— University of Texas at Dallas, USA; Peking University, China

The Impact of Test Case Summaries on Bug Fixing Performance: An Empirical Investigation
Sebastiano Panichella, Annibale Panichella, Moritz Beller, Andy Zaidman, and Harald C. Gall
— University of Zurich, Switzerland; Delft University of Technology, The Netherlands

ACM Student Research Competition
Finalist Presentations: ACM Student Research Competition
May 19th, Thursday, 11:00 - 12:30 PM
Location: San Antonio

See page 23 for the ACM SRC Finalist presentations.

Software Engineering In Practice
Monitoring
May 19th, Thursday, 11:00 - 12:30 PM
Session Chair: Hao Zhong
Location: Wedgwood

The Bones of the System: A Case Study of Logging and Telemetry at Microsoft
Titus Barik, Robert Deline, Steven Drucker, and Danyel Fisher
— North Carolina State University, USA; Microsoft Research, USA

Log Clustering Based Problem Identification for Online Service Systems
Qingwei Lin, Hongyu Zhang, Jian-Guang Lou, Yu Zhang, and Xuewei Chen
— Microsoft Research, China; Microsoft Corporation, USA

Use Runtime Verification to Improve the Quality of Medical Care Practice
Yu Jiang, Han Liu, Hui Kong, Rui Wang, Mohammad Hosseini, Jiaguang Sun, and Lui Sha
— Capital Normal University, China; University of Illinois at Urbana-Champaign, USA; Tsinghua University, China; Institute of Science and Technology, Austria

Assessing the Usefulness of a Requirements Monitoring Tool: A Study Involving Industrial Software Engineers
Rick Rabiser, Michael Vierhauser, and Paul Grünbacher
— Johannes Kepler University Linz, Austria

Software Engineering Education and Training
Team Projects
May 19th, Thursday, 11:00 - 12:30 PM
Session Chair: Charles Wallace
Location: Sabine

Enriching Traditional Software Engineering Curricula with Software Project Management Knowledge
Ana M. Moreno, María-Isabel Sánchez-Segura, Fuensanta Medina-Domínguez, Lawrence Peters, and Jonathan Araujo
— Technical University of Madrid, Spain; Carlos III University Madrid, Spain; Software Consultants International, USA; Tomtom, The Netherlands

When Teams Go Crazy: An Environment to Experience Group Dynamics in Software Project Management Courses
Marco Kuhrmann, and Jürgen Münch
— University of Southern Denmark, Denmark; University of Helsinki and Reutlingen University, Finland

Student Experiences Using GitHub in Software Engineering Courses: A Case Study
Joseph Feliciano, Margaret-Anne Storey, and Alexey Zagalsky
— University of Victoria, Canada

What Communication Tools Do Students Use in Software Projects and How Do Different Tools Suit Different Parts of Project Work?
Otto Seppälä, Tapio Auvinen, Ville Karavirta, Arto Vihavainen, and Petri Ihantola
— Aalto University, Finland; Mobile IceCube, Finland; University of Helsinki, Finland; Tampere University of Technology, Finland

HoliCoW: Automatically Breaking Team-Based Software Projects to Motivate Student Testing
Peng Zhang, Jules White, and Douglas C. Schmidt
— Vanderbilt University, USA

Software Engineering In Society

Sustainable Software Design
May 19th, Thursday, 11:00 - 12:30 PM
Session Chair: Maria Angela Ferrario
Location: Trinity

Software Energy Profiling: Comparing Releases of a Software Product
Erik A. Jagroep, Jan Martijn van_der_Werf, Sjaak Brinkkemper, Giuseppe Procaccianti, Patricia Lago, Leen Blom, and Rob van_Vliet
— Utrecht University, The Netherlands; Vrije Universiteit Amsterdam, The Netherlands; Centric, The Netherlands

Sustainability Design in Requirements Engineering: State of Practice
Ruzanna Chitchyan, Christoph Becker, Stefanie Betz, Leticia Duboc, Birgit Penzenstadler, Norbert Seyff, and Colin C. Venters
— University of Leicester, United Kingdom; University of Toronto, Canada; Karlsruhe Insitute of Technology, Germany; State University of Rio de Janeiro, Brazil; California State University Long Beach, USA; FHNW and University of Zurich, Switzerland

Sustainability Debt: A Portfolio-Based Approach for Evaluating Sustainability Requirements in Architectures
Bendra Ojameruaye, Rami Bahsoon, and Leticia Duboc
— University of Birmingham, United Kingdom; State University of Rio de Janeiro, Brazil

LUNCH 12:30 – 2:00 PM (RIO EXHIBIT HALL A)

Technical Research

Testing 2
May 19th, Thursday, 2:00 - 3:30 PM
Session Chair: Wei Li
Location: Glass Oaks

Reducing Combinatorics in GUI Testing of Android Applications
Nariman Mirzaei, Joshua Garcia, Hamid Bagheri, Alireza Sadeghi, and Sam Malek
— George Mason University, USA; University of California, Irvine, USA

MobiPlay: A Remote Execution Based Record-and-Replay Tool for Mobile Applications
Zhengrui Qin, Yutao Tang, Ed Novak, and Qun Li
— The College of William and Mary, USA

VDTest: An Automated Framework to Support Testing for Virtual Devices
Tingting Yu, Xiao Qu, and Myra B. Cohen
— University of Kentucky, USA; ABB Corporate Research, USA; University of Nebraska - Lincoln, USA

Automated Test Suite Generation for Time-Continuous Simulink Models
Reza Matinnejad, Shiva Nejati, Lionel Briand, and Thomas Bruckmann
— University of Luxembourg, Luxembourg; Delphi Automotive Systems, Luxembourg

Technical Research

Effort Estimation and Search
May 19th, Thursday, 2:00 - 3:30 PM
Session Chair: Tim Menzies
Location: Sabine

Missing Data Imputation Based on Low-Rank Recovery and Semi-Supervised Regression for Software Effort Estimation
Xiao-Yuan Jing, Fumin Qi, Fei Wu, and Baowen Xu
— Wuhan University, China; Nanjing University of Posts and Telecommunications, China; Nanjing University, China

Multi-objective Software Effort Estimation
Federica Sarro, Alessio Petrozziello, and Mark Harman
— University College London, United Kingdom; University of Portsmouth, United Kingdom

A Practical Guide to Select Quality Indicators for Assessing Pareto-Based Search Algorithms in Search-Based Software Engineering
Shuai Wang, Shaukat Ali, Tao Yue, Yan Li, and Marius Liaaen
— Simula Research Laboratory, Norway; University of Oslo, Norway; Beihang University, China; Cisco Systems, Norway

Metamorphic Testing for Software Quality Assessment: A Study of Search Engines
Zhi Quan Zhou, Shaowen Xiang, and Tsong Yueh Chen
— University of Wollongong, Australia; Swinburne University of Technology, Australia

Technical Research

Product Lines
May 19th, Thursday, 2:00 - 3:30 PM
Session Chair: Yves Le Traon
Location: Ballroom B

A Comparison of 10 Sampling Algorithms for Configurable Systems
Flávio Medeiros, Christian Kästner, Márcio Ribeiro, Rohit Gheyi, and Sven Apel
— Federal University of Campina Grande, Brazil; Carnegie Mellon University, USA; Federal University of Alagoas, Brazil; Universität Passau, Germany

Featured Model-Based Mutation Analysis
Xavier Devroey, Gilles Perrouin, Mike Papadakis, Axel Legay, Pierre-Yves Schobbens, and Patrick Heymans
— University of Namur, Belgium; University of Luxembourg, Luxembourg; INRIA Rennes, France

Feature-Model Interfaces: The Highway to Compositional Analyses of Highly-Configurable Systems
Reimar Schröter, Sebastian Krieter, Thomas Thüm, Fabian Benduhn, and Gunter Saake
— University of Magdeburg, Germany; TU Braunschweig, Germany

How Does the Degree of Variability Affect Bug Finding?
Jean Melo, Claus Brabrand, and Andrzej Wasowski
— IT University of Copenhagen, Denmark

Technical Research
Repair and Model Synthesis
May 19th, Thursday, 2:00 - 3:30 PM
Session Chair: Alex Orso
Location: Trinity

Angelix: Scalable Multiline Program Patch Synthesis via Symbolic Analysis
Sergey Mechtaev, Jooyong Yi, and Abhik Roychoudhury
— National University of Singapore, Singapore

An Analysis of the Search Spaces for Generate and Validate Patch Generation Systems
Fan Long, and Martin Rinard
— MIT EECS & CSAIL, USA

PAC Learning-Based Verification and Model Synthesis
Yu-Fang Chen, Chiao Hsieh, Ondrej Lengál, Tsung-Ju Lii, Ming-Hsien Tsai, Bow-Yaw Wang, and Farn Wang
— Academia Sinica, Taiwan; National Taiwan University, Taiwan; Brno University of Technology, Czech Republic

StubDroid: Automatic Inference of Precise Data-Flow Summaries for the Android Framework
Steven Arzt, and Eric Bodden
— Technische Universität Darmstadt, Germany; Paderborn University & Fraunhofer IEM, Germany

Software Engineering In Practice
Evolution
May 19th, Thursday, 2:00 - 3:30 PM
Session Chair: Jan Bosch
Location: Wedgwood

Lessons Learned in Aligning Data and Model Evolution in Collaborative Information Systems
Thomas Reschenhofer, Manoj Bhat, Adrian Hernandez-Mendez, and Florian Matthes
— Technical University of Munich, Germany

Mentoring Trajectories in an Evolving Agile Workplace
Shreya Kumar, Charles Wallace, and Michael Young
— Michigan Technological University, USA; ThermoAnalytics Inc., USA

Visualizing the Effects of Requirements Evolution
Shinobu Saito, Yukako Iimura, Hirokazu Tashiro, Aaron K. Massey, and Annie I. Antón
— NTT CORPORATION, Japan; NTT DATA CORPORATION, Japan; University of Maryland, USA; Georgia Institute of Technology, USA

VEnron: A Versioned Spreadsheet Corpus and Related Evolution Analysis
Wensheng Dou, Liang Xu, Shing-Chi Cheung, Chushu Gao, Jun Wei, and Tao Huang
— Chinese Academy of Sciences, China; Hong Kong University of Science and Technology, China

Software Engineering Education and Training
Software Development
May 19th, Thursday, 2:00 - 3:30 PM
Session Chair: Collin McMillan
Location: Ballroom A

Teaching a Global Software Development Course: Student Experiences Using Onsite Exercise Simulation
Jouni Lappalainen, Nirnaya Tripathi, and Jouni Similä
— University of Oulu, Finland

VisAr3D: An Innovative 3D Visualization of UML Models
Claudia Susie C. Rodrigues, Cláudia M. L. Werner, and Luiz Landau
— COPPE/UFRJ, Brazil

Facing the Challenges of Teaching Requirements Engineering
Roxana Lisette Quintanilla Portugal, Priscila Engiel, Joanna Pivatelli, and Julio Cesar Sampaio do Prado Leite
— PUC-Rio, Brasil

Teaching University Students Kanban with a Collaborative Board Game
Ville T. Heikkilä, Maria Paasivaara, and Casper Lassenius
— Aalto University, Finland

Demonstrations
Analysis and Refactoring
May 19th, Thursday, 2:00 - 3:30 PM
Session Chair: Aditya Nori
Location: San Antonio

JDeodorant: Clone Refactoring
Davood Mazinanian, Nikolaos Tsantalis, Raphael Stein, and Zackary Valenta
— Concordia University, Canada

AD-ROOM: A Tool for Automatic Detection of Refactorings in Object-Oriented Models
Djamel Eddine Khelladi, Reda Bendraou, and Marie-Pierre Gervais
— Sorbonne Universités, France; Université Paris Ouest Nanterre La Defense, France

srcSlice: A Tool for Efficient Static Forward Slicing
Christian D. Newman, Tessandra Sage, Michael L. Collard, Hakam W. Alomari, and Jonathan I. Maletic
— Kent State University, USA; The University of Akron, USA; Miami University, USA

BREAK 3:30-4:00 PM (ATRIUM)

Technical Research
Languages
May 19th, Thursday, 4:00 - 5:30 PM
Session Chair: Michael Ernst
Location: Sabine

Exploring Language Support for Immutability
Michael Coblenz, Joshua Sunshine, Jonathan Aldrich, Brad Myers, Sam Weber, and Forrest Shull
— Carnegie Mellon University, USA; Software Engineering Institute, USA

The Evolution of C Programming Practices: A Study of the Unix Operating System 1973-2015
Diomidis Spinellis, Panos Louridas, and Maria Kechagia
— Athens University of Economics and Business, Greece

An Empirical Study on the Impact of C++ Lambdas and Programmer Experience
Phillip Merlin Uesbeck, Andreas Stefik, Stefan Hanenberg, Jan Pedersen, and Patrick Daleiden
— University of Nevada, Las Vegas, USA; University of Duisburg-Essen, Germany

Understanding and Fixing Multiple Language Interoperability Issues: The C/Fortran Case
Nawrin Sultana, Justin Middleton, Jeffrey Overbey, and Munawar Hafiz
— Auburn University, USA

Technical Research
Debugging
May 19th, Thursday, 4:00 - 5:30 PM
Session Chair: Jun Sun
Location: Glass Oaks

BigDebug: Debugging Primitives for Interactive Big Data Processing in Spark
Muhammad Ali Gulzar, Matteo Interlandi, Seunghyun Yoo, Sai Deep Tetali, Tyson Condie, Todd Millstein, and Miryung Kim
— UCLA, USA

Debugging for Reactive Programming
Guido Salvaneschi, and Mira Mezini
— Technical University of Darmstadt, Germany

Revisit of Automatic Debugging via Human Focus-Tracking Analysis
Xiaoyuan Xie, Zicong Liu, Shuo Song, Zhenyu Chen, Jifeng Xuan, and Baowen Xu
— Wuhan University, China; Nanjing University, China

RETracer: Triaging Crashes by Reverse Execution from Partial Memory Dumps
Weidong Cui, Marcus Peinado, Sang Kil Cha, Yanick Fratantonio, and Vasileios P. Kemerlis
— Microsoft Research, USA; KAIST, South Korea; University of California, Santa Barbara, USA; Brown University, USA

Technical Research
Requirements
May 19th, Thursday, 4:00 - 5:30 PM
Session Chair: Natalia Juristo
Location: Ballroom B

Are "Non-functional" Requirements really Non-functional? An Investigation of Non-functional Requirements in Practice
Jonas Eckhardt, Andreas Vogelsang, and Daniel Méndez Fernández
— Technische Universität München, Germany

Probing for Requirements Knowledge to Stimulate Architectural Thinking
Preethu Rose Anish, Balaji Balasubramaniam, Abhishek Sainani, Jane Cleland-Huang, Maya Daneva, Roel J. Wieringa, and Smita Ghaisas
— TATA Consultancy Services Ltd., India; DePaul University, USA; University of Twente, The Netherlands

Risk-Driven Revision of Requirements Models
Dalal Alrajeh, Axel van Lamsweerde, Jeff Kramer, Alessandra Russo, and Sebastian Uchitel
— Imperial College London, United Kingdom; Université catholique de Louvain, Belgium; Universidad de Buenos Aires and CONICET, Argentina

Discovering "Unknown Known" Security Requirements
Awais Rashid, Syed Asad Ali Naqvi, Rajiv Ramdhany, Matthew Edwards, Ruzanna Chitchyan, and M. Ali Babar
— Lancaster University, United Kingdom; University of Adelaide, Australia

V2025
Visions of 2025 and Beyond II
May 19th, Thursday, 4:00 - 5:30 PM
Session Chairs: Gail Murphy and David Rosenblum
Location: Ballroom A

Analysing the Program Analyser
Cristian Cadar, and Alastair F. Donaldson
— Imperial College London, United Kingdom

Prodirect Manipulation: Bidirectional Programming for the Masses
Ravi Chugh
— University of Chicago, USA

Testing the Untestable - Model Testing of Complex Software-Intensive Systems
Lionel Briand, Shiva Nejati, Mehrdad Sabetzadeh, and Domenico Bianculli
— University of Luxembourg, Luxembourg

Theories of Everything
Pamela Zave
— AT&T Labs - Research, USA

Software Engineering In Practice

Dynamic Analysis
May 19th, Thursday, 4:00 - 5:30 PM
Session Chair: Xiaoyin Wang
Location: Wedgwood

System Testing of Repository-Style Software: An Experience Report
Paolo Salvaneschi
— University of Bergamo, Italy

Enhancing Test Case Prioritization in an Industrial Setting with Resource Awareness and Multi-objective Search
Shuai Wang, Shaukat Ali, Tao Yue, Øyvind Bakkeli, and Marius Liaaen
— Simula Research Laboratory, Norway; University of Oslo. Norway; Cisco Systems, Norway

Integrating Automatic Backward Error Recovery in Asynchronous Rich Clients
Manuel Quintela-Pumares, Bruno Cabral, Daniel Fernandez-Lanvin, and Alberto-Manuel Fernandez-Alvarez
— University of Oviedo, Spain; University of Coimbra, Portugal

Opaque Service Virtualisation: A Practical Tool for Emulating Endpoint Systems
Steve Versteeg, Miao Du, Jean-Guy Schneider, John Grundy, Jun Han, and Menka Goyal
— CA Technologies, Australia; Swinburne University of Technology, Australia; Deakin University, Australia

Demonstrations

Trending Technologies
May 19th, Thursday, 4:00 - 5:30 PM
Session Chair: Yuanfang Cai
Location: Trinity

SPYSE - A Semantic Search Engine for Python Packages and Modules
Shiva Krishna Imminni, Mir Anamul Hasan, Michael Duckett, Puneet Sachdeva, Sudipta Karmakar, Piyush Kumar, and Sonia Haiduc
— Florida State University, USA

FeatureIDE: Taming the Preprocessor Wilderness
Jens Meinicke, Thomas Thüm, Reimar Schröter, Sebastian Krieter, Fabian Benduhn, Gunter Saake, and Thomas Leich
— METOP GmbH, Germany; University of Magdeburg, Germany; TU Braunschweig, Germany

JooMDD: A Model-Driven Development Environment for Web Content Management System Extensions
Dennis Priefer, Peter Kneisel, and Gabriele Taentzer
— KITE, Germany; Philipps-Universität Marburg, Germany

Microsoft Touch Develop and the BBC micro:bit
Thomas Ball, Jonathan Protzenko, Judith Bishop, Michal Moskal, Jonathan de_Halleux, Michael Braun, Steve Hodges, and Clare Riley
— Microsoft Research, USA; Microsoft Research, United Kingdom; Microsoft, United Kingdom

Posters

Posters I
May 19th, Thursday, 4:00 - 5:30 PM
Session Chairs: James Clause and Dimitra Giannakopoulou
Location: San Antonio

See page 24 for the Poster I presentations.

Banquet

May 19th, Thursday, 6:30 - 10:00 PM
Location: Bullock Texas State History Museum
See page 44 for information about the Banquet

Friday, May 20th

HMA and SEIP Keynotes

May 20th, Friday, 8:30 – 10:30 AM
Session Chair: Willem Visser
Location: Grand Ballroom

2016 Harlan D. Mills Award Recipient Keynote

Presenter: Lionel Briand

Programming Dangerously! Can Formal Methods and Empirical Software Engineering Come to the Rescue?

Wolfram Schulte (Microsoft Research, USA)

This award prompts me to reflect on how my team at Microsoft Research was able to bring research in formal methods and empirical software engineering into practice. How did I select the topics for my teams and my research? How did we conduct the research and which methods did we choose? How did we show progress, and equally important when did we decide to stop? I will also discuss the importance of knowing your customers, i.e., who, how and why a customer will use your research contributions. Of equal importance is to understand the constraints of a product group that productizes your research, and how your role changes when a product team adopts your ideas.
Three years ago, I changed roles and founded a product group, called Tools for Software Engineers, which builds developer tools and service at scale. I will explain what new research challenges I encountered in building software services. I will argue that a combination of both formal methods and empirical software engineering is the most promising approach to impact existing practice.

Software Engineering in Practice Keynote

Presenter: Tao Xie

Is Continuous Adoption in Software Engineering Achievable and Desirable?

Gail C. Murphy (University of British Columbia and Tasktop Technologies Incorporated, Canada)

Continuity in software development is all about shortening cycle times. For example, continuous integration shortens the time to integrating changes from multiple developers and continuous delivery shortens the time to get those integrated changes into the hands of users. Although it is now possible to get multiple new versions of complex software systems released per day, it still often takes years, if ever, to get software engineering research results into use by software development teams. What would software engineering research and software engineering development look like if we could shorten the cycle time from taking a research result into practice? What can we learn from how continuity in development is performed to make it possible to achieve continuous adoption of research results? Do we even want to achieve continuous adoption? In this talk, I will explore these questions, drawing from experiences I have gained in helping to take a research idea to market and from insights learned from interviewing industry leaders.

BREAK 10:30 – 11:00 AM (ATRIUM)

Technical Research

Dynamic Analysis
May 20th, Friday, 11:00 - 12:30 PM
Session Chair: Ivan Beschastnikh
Location: Ballroom A

Behavioral Log Analysis with Statistical Guarantees
Nimrod Busany and Shahar Maoz
— Tel Aviv University, Israel

🏆Efficient Large-Scale Trace Checking Using MapReduce
Marcello M. Bersani, Domenico Bianculli, Carlo Ghezzi, Srdan Krstic, and Pierluigi San Pietro
— Politecnico di Milano, Italy; University of Luxembourg, Luxembourg

🏆Feedback-Directed Instrumentation for Deployed JavaScript Applications
Magnus Madsen, Frank Tip, Esben Andreasen, Koushik Sen, and Anders Møller
— University of Waterloo, Canada; Samsung Research America, USA; Aarhus University, Denmark; University of California, Berkeley, USA

DoubleTake: Fast and Precise Error Detection via Evidence-Based Dynamic Analysis
Tongping Liu, Charlie Curtsinger, and Emery D. Berger
— University of Texas at San Antonio, USA; Grinnell College, USA; University of Massachusetts, Amherst, USA

Technical Research
Security
May 20th, Friday, 11:00 - 12:30 PM
Session Chair: Tevfik Bultan
Location: Glass Oaks

Automated Partitioning of Android Applications for Trusted Execution Environments
Konstantin Rubinov, Lucia Rosculete, Tulika Mitra, and Abhik Roychoudhury
— Politecnico di Milano, Italy; Application Threat Intelligence - Ixia, Romania; National University of Singapore, Singapore

"Jumping Through Hoops": Why do Java Developers Struggle with Cryptography APIs?
Sarah Nadi, Stefan Krüger, Mira Mezini, and Eric Bodden
— Technische Universität Darmstadt, Germany; Universität Paderborn & Fraunhofer IEM, Germany; Lancaster University, United Kingdom

Finding Security Bugs in Web Applications Using a Catalog of Access Control Patterns
Joseph P. Near and Daniel Jackson
— University of California, Berkeley, USA; Massachusetts Institute of Technology, USA

Reference Hijacking: Patching, Protecting and Analyzing on Unmodified and Non-rooted Android Devices
Wei You, Bin Liang, Wenchang Shi, Shuyang Zhu, Peng Wang, Sikefu Xie, and Xiangyu Zhang
— Renmin University of China, China

Technical Research
Collaborative
May 20th, Friday, 11:00 - 12:30 PM
Session Chair: Chris Bird
Location: Ballroom B

Building a Theory of Job Rotation in Software Engineering from an Instrumental Case Study
Ronnie E. S. Santos, Fabio Q. B. da Silva, Cleyton V. C. de Magalhães, and Cleviton V. F. Monteiro
— Universidade Federal de Pernambuco, Brazil; Universidade Federal Rural de Pernambuco, Brazil

The Challenges of Staying Together While Moving Fast: An Exploratory Study
Julia Rubin and Martin Rinard
— Massachusetts Institute of Technology, USA

The Sky Is Not the Limit: Multitasking Across GitHub Projects
Bogdan Vasilescu, Kelly Blincoe, Qi Xuan, Casey Casalnuovo, Daniela Damian, Premkumar Devanbu, and Vladimir Filkov
— University of California, Davis, USA; University of Auckland, New Zealand; Zhejiang University of Technology, China; University of Victoria, Canada

Quantifying and Mitigating Turnover-Induced Knowledge Loss: Case Studies of Chrome and a Project at Avaya
Peter C. Rigby, Yue Cai Zhu, Samuel M. Donadelli, and Audris Mockus
— Concordia University, Canada; University of Tennessee, USA

Posters
Posters II
May 20th, Friday, 11:00 - 12:30 PM
Session Chairs: James Clause and Dimitra Giannakopoulou
Location: San Antonio

See page 24 for the Poster II presentations.

Software Engineering In Practice
Development Support
May 20th, Friday, 11:00 - 12:30 PM
Session Chair: Romain Robbes
Location: Wedgwood

A Study of the Quality-Impacting Practices of Modern Code Review at Sony Mobile
Junji Shimagaki, Yasutaka Kamei, Shane Mcintosh, Ahmed E. Hassan, and Naoyasu Ubayashi
— Sony Mobile, Japan; Kyushu University, Japan; McGill University, Canada; Queen's University, Canada

CORRECT: Code Reviewer Recommendation in GitHub Based on Cross-Project and Technology Experience
Mohammad Masudur Rahman, Chanchal K. Roy, and Jason A. Collins
— University of Saskatchewan, Canada; Google Inc., USA

How Do Free/Open Source Developers Pick Their Tools? A Delphi Study of the Debian Project
Martin F. Krafft, Klaas-Jan Stol, and Brian Fitzgerald
— Debian Developer, Germany; Lero - The Irish Software Research Centre, Ireland

Observations on Knowledge Transfer of Professional Software Developers during Pair Programming
Franz Zieris and Lutz Prechelt
— Freie Universität Berlin, Germany

Software Engineering Education and Training
Tools and Toys
May 20th, Friday, 11:00 - 12:30 PM
Session Chair: Dewayne Perry
Location: Trinity

SolMiner: Mining Distinct Solutions in Programs
Lannan Luo and Qiang Zeng
— The Pennsylvania State University, USA; Temple University, USA

STAGE - Software Tool for Automatic Grading of Testing Exercises - Case Study Paper
Sebastian Pape, Julian Flake, Andreas Beckmann, and Jan Jürjens
— Goethe University Frankfurt, Germany; TU Dortmund, Germany

Measuring Code Behavioral Similarity for Programming and Software Engineering Education
Sihan Li, Xusheng Xiao, Blake Bassett, Tao Xie, and Nikolai Tillmann
— University of Illinois at Urbana-Champaign, USA; NEC Laboratories America, USA; Microsoft Research, USA

Engaging Software Estimation Education Using LEGOs: A Case Study
Linda M. Laird and Ye Yang
— Stevens Institute of Technology, USA

Software Engineering In Society
Values in Software Engineering
May 20th, Friday, 11:00 - 12:30 PM
Session Chair: Birgit Penzenstadler
Location: Sabine

Values-First SE: Research Principles in Practice
Maria Angela Ferrario, Will Simm, Stephen Forshaw, Adrian Gradinar, Marcia Tavares Smith, and Ian Smith
— Lancaster University, United Kingdom

A Guided Tour of the Legal Implications of Software Cloning
Paolo Ciancarini, Daniel Russo, Alberto Sillitti, and Giancarlo Succi
— University of Bologna & CINI, Italy; Center for Applied Software Engineering & CINI, Italy; Innopolis University, Russian Federation

Engineering Software Assemblies for Participatory Democracy: The Participatory Budgeting Use Case
James Holston, Valérie Issarny, and Cristhian Parra
— University of California, Berkeley, USA; Inria, France

LUNCH 12:30 – 2:00 PM (RIO EXHIBIT HALL A)

Technical Research
Software Quality
May 20th, Friday, 2:00 - 3:30 PM
Session Chair: James Clause
Location: Ballroom A

Automatically Recommending Peer Reviewers in Modern Code Review
Motahareh Bahrami Zanjani, Huzefa Kagdi, and Christian Bird
— Wichita State University, USA; Microsoft Research, USA

Quality Experience: A Grounded Theory of Successful Agile Projects without Dedicated Testers
Lutz Prechelt, Holger Schmeisky, and Franz Zieris
— Freie Universität Berlin, Germany

Code Review Quality: How Developers See It
Oleksii Kononenko, Olga Baysal, and Michael W. Godfrey
— University of Waterloo, Canada; Carleton University, Canada

Revisiting Code Ownership and Its Relationship with Software Quality in the Scope of Modern Code Review
Patanamon Thongtanunam, Shane McIntosh, Ahmed E. Hassan, and Hajimu Iida
— Nara Institute of Science and Technology, Japan; McGill University, Canada; Queen's University, Canada

Technical Research
Program Analysis
May 20th, Friday, 2:00 - 3:30 PM
Session Chair: Eric Bodden
Location: Ballroom B

IntEQ: Recognizing Benign Integer Overflows via Equivalence Checking across Multiple Precisions
Hao Sun, Xiangyu Zhang, Yunhui Zheng, and Qingkai Zeng
— Nanjing University, China; University, Purdue University, USA; IBM T.J. Watson Research Center, USA

Nomen est Omen: Exploring and Exploiting Similarities between Argument and Parameter Names
Hui Liu, Qiurong Liu, Cristian-Alexandru Staicu, Michael Pradel, and Yue Luo
— Beijing Institute of Technology, China; TU Darmstadt, Germany

Floating-Point Precision Tuning Using Blame Analysis
Cindy Rubio-González, Cuong Nguyen, Benjamin Mehne, Koushik Sen, James Demmel, William Kahan, Costin Iancu, Wim Lavrijsen, David H. Bailey, and David Hough
— University of California, Davis, USA; University of California, Berkeley, USA; Lawrence Berkeley National Laboratory, USA; Oracle Corporation, USA

Crowdsourcing Program Preconditions via a Classification Game
Daniel Fava, Dan Shapiro, Joseph Osborn, Martin Schäef, and E. James Whitehead Jr.
— University of California, Santa Cruz, USA; SRI International, USA

Technical Research
Concurrency
May 20th, Friday, 2:00 - 3:30 PM
Session Chair: Arie van Deursen
Location: Trinity

Scalable Thread Sharing Analysis
Jeff Huang
— Texas A&M University, USA

Fixing Deadlocks via Lock Pre-Acquisitions
Yan Cai and Lingwei Cao
— Chinese Academy of Sciences, China

Coverage-Driven Test Code Generation for Concurrent Classes
Valerio Terragni and Shing-Chi Cheung
— The Hong Kong University of Science and Technology, China

Locking Discipline Inference and Checking
Michael D. Ernst, Alberto Lovato, Damiano Macedonio, Fausto Spoto, and Javier Thaine
— University of Washington, USA; Università di Verona, Italy; Julia Srl, Italy

Technical Research
Maintenance
May 20th, Friday, 2:00 - 3:30 PM
Session Chair: Neha Rungta
Location: Glass Oaks

Improving Refactoring Speed by 10X
Jongwook Kim, Don Batory, Danny Dig, and Maider Azanza
— University of Texas at Austin, USA; Oregon State University, USA; University of the Basque Country (UPV/EHU), Spain

SourcererCC: Scaling Code Clone Detection to Big-Code
Hitesh Sajnani, Vaibhav Saini, Jeffrey Svajlenko, Chanchal K. Roy, and Cristina V. Lopes
— University of California, Irvine, USA; University of Saskatchewan, Canada

Understanding Asynchronous Interactions in Full-Stack JavaScript
Saba Alimadadi, Ali Mesbah, and Karthik Pattabiraman
— University of British Columbia, Canada

Shadow of a Doubt: Testing for Divergences between Software Versions
Hristina Palikareva, Tomasz Kuchta, and Cristian Cadar
— Imperial College London, United Kingdom

Software Engineering In Practice
Process
May 20th, Friday, 2:00 - 3:30 PM
Session Chair: Pete Rotella
Location: Wedgwood

Assessing the Process of an Eastern European Software SME Using Systemic Analysis, GQM, and Reliability Growth Models - A Case Study
Vladimir Ivanov, Manuel Mazzara, Witold Pedrycz, Alberto Sillitti, and Giancarlo Succi
— Innopolis University, Russian Federation; University of Alberta, Canada; Center for Applied Software Engineering, Italy

Model Driven Development of Business Applications – A Practitioner's Perspective
Vinay Kulkarni
— Tata Consultancy Services Research, India

Industry Application of Continuous Integration Modeling: A Multiple-Case Study
Daniel Ståhl and Jan Bosch
— Ericsson AB, Sweden; Chalmers University of Technology, Sweden

"What Went Right and What Went Wrong": An Analysis of 155 Postmortems from Game Development
Michael Washburn_Jr., Pavithra Sathiyanarayanan, Meiyappan Nagappan, Thomas Zimmermann, and Christian Bird
— Rochester Institute of Technology, USA; Microsoft Research, USA

Software Engineering Education and Training
Verification and Test
May 20th, Friday, 2:00 - 3:30 PM
Session Chair: Muhammad Ali Babar
Location: San Antonio

Can Software Engineering Students Program Defect-Free? An Educational Approach
Guoping Rong, He Zhang, Qi Shan, and Dong Shao
— Nanjing University, China

Impact of CS Programs on the Quality of Test Cases Generation: An Empirical Study
Omar S. Gómez, Sira Vegas, and Natalia Juristo
— Escuela Superior Politécnica de Chimborazo, Ecuador; Universidad Politécnica de Madrid, Spain; University of Oulu, Finland

Teaching Code Review Management Using Branch Based Workflows
Stephan Krusche, Mjellma Berisha, and Bernd Bruegge
— Technische Universität München, Germany

Let's Verify Linux: Accelerated Learning of Analytical Reasoning through Automation and Collaboration
Suraj Kothari, Ahmed Tamrawi, Jeremias Sauceda, and Jon Mathews
— Iowa State University, USA; EnSoft Corporation, USA

Demonstrations

Program Understanding

May 20th, Friday, 2:00 - 3:30 PM

Session Chair: Yuanfang Cai

Location: Sabine

DECA: Development Emails Content Analyzer

Andrea Di_Sorbo, Sebastiano Panichella, Corrado A. Visaggio, Massimiliano Di_Penta, Gerardo Canfora, and Harald Gall

— University of Sannio, Italy; University of Zurich, Switzerland

CodeTube: Extracting Relevant Fragments from Software Development Video Tutorials

Luca Ponzanelli, Gabriele Bavota, Andrea Mocci, Massimiliano Di_Penta, Rocco Oliveto, Barbara Russo, Sonia Haiduc, and Michele Lanza

— Università della Svizzera Italiana, Switzerland; Free University of Bozen-Bolzano, Italy; University of Sannio, Italy; University of Molise, Italy; Florida State University, USA

TASSAL: Autofolding for Source Code Summarization

Jaroslav Fowkes, Pankajan Chanthirasegaran, Razvan Ranca, Miltiadis Allamanis, Mirella Lapata, and Charles Sutton

— University of Edinburgh, United Kingdom; Tractable,U nited Kingdom

LibRadar: Fast and Accurate Detection of Third-Party Libraries in Android Apps

Ziang Ma, Haoyu Wang, Yao Guo, and Xiangqun Chen

— Peking University, China

BREAK 3:30-4:00 PM (ATRIUM)

Awards Session III

May 20th, Friday, 4:00 – 5:00 PM

Session Chairs: Nenad Medvidovic and Harald Gall

Location: Grand Ballroom

See page 38 for awards presented in Awards Session III.

ICSE 2016 Closing

May 20th, Friday, 5:00 – 5:30 PM

Session Chair: Nenad Medvidovic

Thanks to organizers and attendees

Coming ICSE announcements

ICSE 2017 - Buenos Aires, Argentina - Sebastian Uchitel

ICSE 2018 - Gothenburg, Sweden - Ivica Crnkovic

ICSE 2016 Awards

Awards I

May 18th, Wednesday, 8:30 – 9:00 AM

Location: Grand Ballroom

ACM SIGSOFT Distinguished Paper Awards

Efficient Large-Scale Trace Checking Using MapReduce
Marcello M. Bersani, Domenico Bianculli, Carlo Ghezzi, Srdan Krstic, and Pierluigi San Pietro

Energy Profiles of Java Collections Classes
Samir Hasan, Zachary King, Munawar Hafiz, Mohammed Sayagh, Bram Adams, and Abram Hindle

Feedback-Directed Instrumentation for Deployed JavaScript Applications
Magnus Madsen, Frank Tip, Esben Andreasen, Koushik Sen, and Anders Møller

From Word Embeddings to Document Similarities for Improved Information Retrieval in Software Engineering
Xin Ye, Hui Shen, Xiao Ma, Razvan Bunescu, and Chang Liu

Guiding Dynamic Symbolic Execution toward Unverified Program Executions
Maria Christakis, Peter Müller, and Valentin Wüstholz

On the Techniques We Create, the Tools We Build, and Their Misalignments: A Study of KLEE
Eric F. Rizzi, Sebastian Elbaum, and Matthew B. Dwyer

Termination-Checking for LLVM Peephole Optimizations
David Menendez and Santosh Nagarakatte

VDTest: An Automated Framework to Support Testing for Virtual Devices
Tingting Yu, Xiao Qu, and Myra B. Cohen

Work Practices and Challenges in Pull-Based Development: The Contributor's Perspective
Georgios Gousios, Margaret-Anne Storey, and Alberto Bacchelli

Distinguished Reviewers

Shing-chi Cheung, The Hong Kong University of Science and Technology, Hong Kong
Eric Bodden, Fraunhofer SIT & Technische Universität Darmstadt, Germany
Lutz Prechelt, Freie Universitaet Berlin, Germany
Chris Bird, Microsoft Research, USA

Awards II

May 19th, Thursday, 8:30 – 9:00 AM

Location: Grand Ballroom

IEEE CS TCSE Awards

IEEE CS TCSE Distinguished Service Award
Dr. Hausi Müller, University of Victoria, Canada

IEEE CS TCSE Distinguished Education Award
Dr. Timothy Lethbridge, University of Ottawa, Canada

IEEE CS TCSE Distinguished Women in Science and Engineering (WISE) Leadership Award
Dr. Eleni Stroulia, University of Alberta

IEEE CS TCSE Distinguished Synergy Award
Microsoft Research, Redmond, USA

Harlan Mills Award
Dr. Wolfram Schulte, Microsoft Research

ACM SIGSOFT Awards

ACM SIGSOFT Distinguished Service Award
Martin Glinz, University of Zurich, Switzerland

ACM SIGSOFT Influential Educator Award
Lori Pollock, University of Delaware, USA

ACM SIGSOFT Outstanding Research Award
James Herbsleb, Carnegie Mellon University, USA

ACM SIGSOFT Impact Paper Award
Finding Bugs with a Constraint Solver
Daniel Jackson and Mandana Vaziri
In Proceedings of the 2000 ACM SIGSOFT International Symposium on Software Testing and Analysis (ISSTA '00)

ACM SIGSOFT Outstanding Doctoral Dissertation Award
Regression Test Selection: Theory and Practice
Milos Gligoric, University of Illinois at Urbana-Champaign, *Darko Marinov, advisor*

Visions of 2025 and Beyond Paper Awards

1st Prize
Wide-Field Ethnography: Studying Software Engineering in 2025 and Beyond
David Socha, Robin Adams, Kelly Franznick, Wolff-Michael Roth, Kevin Sullivan, Josh Tenenberg, and Skip Walter

2nd Prize
Code Drones
Mithun P. Acharya, Chris Parnin, Nicholas A. Kraft, Aldo Dagnino, and Xiao Qu

3rd Prize
Theories of Everything
Pamela Zave

Awards III

May 20th, Friday, 4:00 – 5:00 PM
Location: Grand Ballroom

ICSE-10 Most Influential Paper Award (Paper appeared at ICSE 2006)

Winner
Who Should Fix This Bug?
John Anvik, Lyndon Hiew, and Gail C. Murphy

Runner up
Model-Based Development of Dynamically Adaptive Software
Ji Zhang and Betty H.C. Cheng

Best Software Engineering in Practice Paper Award

Continuous Deployment at Facebook and OANDA
Tony Savor, Mitchell Douglas, Michael Gentili, Laurie Williams, Kent Beck, and Michael Stumm

Software Engineering Education and Training Paper Awards

Best Full Paper
Teaching Agile - Addressing the Conflict between Project Delivery and Application of Agile Methods
Jan-Philipp Steghöfer, Eric Knauss, Emil Alégroth, Imed Hammouda, Håkan Burden, and Morgan Ericsson

Best Short Paper
Collaborative Software Engineering Education between College Seniors and Blind High School Students
Collin McMillan and Amanda Rodda-Tyler

ACM Student Research Competition (SRC) Winners: Graduate Category

To be decided at the conference

Student Contest on Software Engineering

Finalists
MeetMe, A Meeting Planner
Manuel Gollmann, Danny Friedrich, Natascha Kania, Ronald Robertson, and Malte Kloß
— University of Applied Sciences Neu-Ulm, Germany

CoCo: A Code Coach
Sophia Stahl, Jan Pawellek, Dominik Sterk, and Julia Kreutzer
— Heidelberg University, Germany

Agile TweetViz
Kedar Pitke, Aditya Bivalkar, Tanmay Patil, Meenal Kulkarni, and Snehal Shendware
— Arizona State University, USA

Winner
To be decided at the conference

Poster Awards

Best Poster
Continuous Assessment of Software Traceability
Patrick Rempel and Patrick Mäder

Distinguished Posters
Topsy-Turvy: A Smarter and Faster Parallelization of Mutation Analysis
Rahul Gopinath, Carlos Jensen, and Alex Groce

When to Release in Open Source Project?
Zeheng Li and LiGuo Huang

Debugging Reactive Programming with Reactive Inspector
Guido Salvaneschi and Mira Mezini

Candoia: A Platform and Ecosystem for Mining Software Repositories Tools
Nitin M Tiwari, Ganesha Upadhyaya, and Hridesh Rajan

(Presented in the ACM SIGSOFT/IEEE CS TCSE Town Hall Meeting)

Video Contest

Javier Gonzalez-Sanchez
— Arizona State University

(Presented in the ACM SIGSOFT/IEEE CS TCSE Town Hall Meeting)

Doctoral Symposium

To be decided during the conference

(Presented in the ACM SIGSOFT/IEEE CS TCSE Town Hall Meeting)

ACM Fellows

Michael Franz
Michael Rung-Tsong Lyu
Sriram Rajamani

ACM Distinguished Members

Tao Xie
Sebastian Uchitel
Margaret Burnett
Nenad Medvidovic
Nachiappan Nagappan

Community Meetings

Sat 14	Tue 17	Wed 18	Thu 19	Fri 20	Sat 21 & Sun 22
MSR SC Lunch Meeting (San Marcos)		IEEE TCSE EC Lunch Meeting (Guadalupe)	ESEC/FSE 2017 SC Lunch Meeting (Guadalupe)	FSE 2016 OC Lunch Meeting (Pecos)	FSE 2016 PC 8:00 am - 6:00 pm (Ballroom B)
		SIGSOFT EC Lunch Meeting (Bosque)	ICSE 2017 OC Lunch Meeting (Pecos)	ICSE 2017 PB Lunch Meeting (Treehouse Kitchen)	
		TSE Board Lunch Meeting (Concho)		TOSEM EB Lunch Meeting (Guadalupe)	
		ICSE 2018 OC Lunch Meeting (Pecos)		ICSE 2016 Debriefing 5:00 - 7:00 pm (Sabine)	
		Journal of Software Evolution Lunch Meeting (Treehouse Kitchen)			
	50 Years of SE 4:00 - 6:00 pm (Blanco)	50 Years of SE 4:00 - 6:00 pm (Canadian)			
	Engaging Undergraduates in Your Research 7:00 - 9:00 pm (Pecos)	*ACM SIGSOFT / IEEE CS TCSE Town Hall 5:45 - 7:30 pm (Glass Oaks)			

**** Meeting open to all ICSE attendees. All other meetings are by invitation only.***

General Conference Information

Conference Venue: Renaissance Austin Hotel
9721 Arboretum Boulevard
Austin Texas 78759 USA
+1-512-343-2626

Website: http://2016.icse-conferences.org
Facebook: www.facebook.com/icseconf
Twitter: @icseconf
Instagram: www.instagram.com/
On Twitter and Instagram, please use the hashtag #icse16.

Internet Access:
Free WIFI Internet access is available in the lobby, public areas, and meeting rooms using
SSID: ICSE
Password: ICSE2016

Name Badges:
Attendees must wear their name badge at all times to gain entry to the conference events. Your registration packet will contain tickets to all events based on the events you registered for. These tickets should be kept in your name badge and presented to the Conference staff upon request. If you have a dietary restriction card, please show it to your server to obtain your special meal. Keep this card with you for the duration of the Conference, including for the Banquet.

Registration Desk:
The ICSE 2016 Registration Desk is located in Plaza Booths A and B.

Registration Open Hours are:

Friday, May 13	8:00 - 9:00 pm
Saturday, May 14	7:30 - 11:30 am
Sunday, May 15	7:30 - 11:30 am, 8:00 - 9:00 pm
Monday, May 16	7:30 - 10:30 am, 1:00 - 6:00 pm
Tuesday, May 17	7:30 - 10:30 am, 2:00 - 7:00 pm
Wednesday, May 18	7:30 - 11:30 am, 1:00 - 5:00 pm
Thursday, May 19	7:30 - 11:30 am, 1:00 - 5:00 pm
Friday, May 20	7:30 - 11:30 am

Access to Proceedings:
Attendees of the main conference, workshops, and co-located events will receive a USB drive with the ICSE event proceedings. You may also download an on-line version from:
conferences.computer.org/icse/2016
login: icse16
password: conf16

Transportation:
Downtown Austin is approximately 10 miles from the Renaissance Austin Hotel (15 minutes by cab).

A bus stop is approximately 1 block north of the hotel on Great Hills Trail. You can take either the number 982/983 commuter buses or the local number 3 bus to get to downtown Austin. See http://www.capmetro.org/ for details on routes and pricing.

Cabs cost about $30-35 each way.
There are numerous taxicab services. A few are listed below:
Yellow Cab - (512) 452-999. Website: http://www.yellowcabaustin.com/
Austin Express Cab Service - (512) 666-4141. Website: http://www.austinexpresscab.com/
Austin Cab Company - (512) 478-2222. Website: http://www.austincab.com/
10/10 Taxi - (512) 444-1010. Website: http://1010taxi.com/

ICSE 2016 attendees will receive a 10% discount on transfer from the Austin-Bergstrom International Airport to the Renaissance Austin Hotel with Super Shuttle or ExecuCar if they book online with the link below (Discount Code: XBQ3V).
http://groups.supershuttle.com/internationalconferenceonsoftwareengineering.html
Full Super Shuttle fare: $20 (one way)
Estimated taxi fare: $45 (one way)

Insurance:
ICSE Organizers cannot accept responsibility for accidents that might occur. Attendees should obtain travel insurance (medical, personal accident and luggage) in their home country prior to departure.

Emergency Telephone Numbers:
Emergencies or all crimes/public order problems in-progress: 911
Crimes/public order problems after they have occurred: 311

Electric Supply:
Outlets in the United States are the "Type B" North American NEMA 5-15 standard and usually supply electricity at between 110 and 120 volts AC.

Things to do in Austin:
- LBJ Presidential Library - http://www.lbjlibrary.org/
- Zilker Park - https://austintexas.gov/department/zilker-metropolitan-park
- Barton Springs Pool - https://austintexas.gov/department/barton-springs-pool
- Congress Avenue Bridge / Bats - http://www.capitalcruises.com/bat-watching/
- Lunch/Dinner Cruises on Lady Bird Lake - http://www.capitalcruises.com/dinner-cruises-and-lunch-cruises/
- Austin Segway City Tour - http://www.segcity.com/austin/
- Zilker Botanical Garden - http://www.zilkergarden.org/index.html
- Austin Craft Brewery Tour - http://www.austinbrewbus.com/
- Downtown Pub Crawl - http://www.pubcrawlerofaustin.com/
- Local Tours (city and lake) - http://austinducks.com/index.html
- Harry Ransom Center (University of Texas Campus) - http://www.hrc.utexas.edu/
- Music/Nightclub - http://continentalclub.com/#intro
- Music/Nightclub (Blues) - http://www.antonesnightclub.com/
- Visitors' Information: http://www.austintexas.org/visit
- About Austin: http://www.austintexas.gov/resident/about-austin

Things to do in San Antonio:

- Explore Downtown - http://downtownsanantonio.org/
    1. The River Walk is a tourist destination – a beautiful place to take a walk and grab a bite to eat while enjoying the waterfront
    2. The historic Alamo. The Alamo is a 4.2 acre complex of gardens and exhibits adjacent to the River Walk
    3. San Antonio Museum of Art
    4. The Majestic Theatre, built in 1929, is beautifully ornate, featuring a domed ceiling painted with stars and clouds
    5. The Cathedral of San Fernando, built in 1750, is the oldest cathedral in the United States
    6. The At La Villita And Market Square – is a little community of artists and an authentic Mexican market
- SeaWorld is the world's largest marine park, right in San Antonio https://seaworldparks.com/en/seaworld-sanantonio/
- Six Flags Fiesta Texas offers family-friendly entertainment and high-octane roller coasters: https://www.sixflags.com/fiestatexas
- The Spurs is the home team of San Antonio and five-time NBA Championship winners. The Spurs games will give you plenty to cheer for http://www.nba.com/spurs/
- Missions Concepcion, San Jose, San Juan, and Espada make up the San Antonio Missions National Historical Park located along the San Antonio River https://www.nps.gov/saan/planyourvisit/concepcion.htm

Banquet

Banquet at The Bullock Texas State History Museum

The ICSE 2016 Banquet takes place Thursday May 19 from 6:30 PM to 10:00 PM at The Bullock Texas State History Museum (www.TheStoryofTexas.com). Dating back to 2001, the museum is named after Bob Bullock, the State's 38th Lieutenant Governor and a champion for the preservation of Texas history and culture. At the Bullock, you will not only enjoy a fabulous Texican Buffet and each other's company, but also experience Texas and it's history all under one roof.

Entertainment will include a traditional Mariachi Band and dancers (www.mariachi-amor.com) as you enter this unique venue and -- perhaps something you've seen only in the movies -- a live trick roper. Of course, it would be downright 'un-Austintatious' not to listen to live music while visiting the Live Music Capital of the World. So we are pleased to have engaged Art and Lisa (http://artandlisa.com) to liven the evening with country music.

Unique Photo-Op

Take a turn to have your photo taken on an full-sized longhorn steer and with a Miniature burro, both provided by the Cross T Ranch (www.TheCrossTRanch.com).

Downtown Austin

After the banquet, you are encouraged to take in some Austin nightlife. The Bullock is just across the street from the University of Texas campus and three blocks from both the State Capitol and Scholz's Garden (www.scholzgarten.com). Scholz's Garden (a beer garden and restaurant) is the oldest operating business in Texas (opened in 1866) and is truly worth visiting.

The Congress Bridge, famous for its bat population, is a block beyond the State Capitol, on 10th Street. Four blocks further down Congress puts you at 6th Street, known for its many bars and hotspots. Additional venues along 4th and 5th Streets provide ample opportunities to listen to live music and sample local entertainment. The Rainey Street Historic District also features historic homes, many of the Bungalow style, in the southeast corner of downtown Austin.

Transportation

The first round of buses will leave the Renaissance Austin Hotel for the Bullock Texas State History Museum at 6:00 PM, with a second round to follow around 7:00 PM (depending on traffic).

Busses will also be available starting at 8:30 PM to take attendees from the museum to Rainey Street and 6th Street. Four busses will run until 11:30 PM (last pick-up) to transport attendees back to the hotel.

For those wanting to drive, there is free parking in the underground garage at The Bullock.

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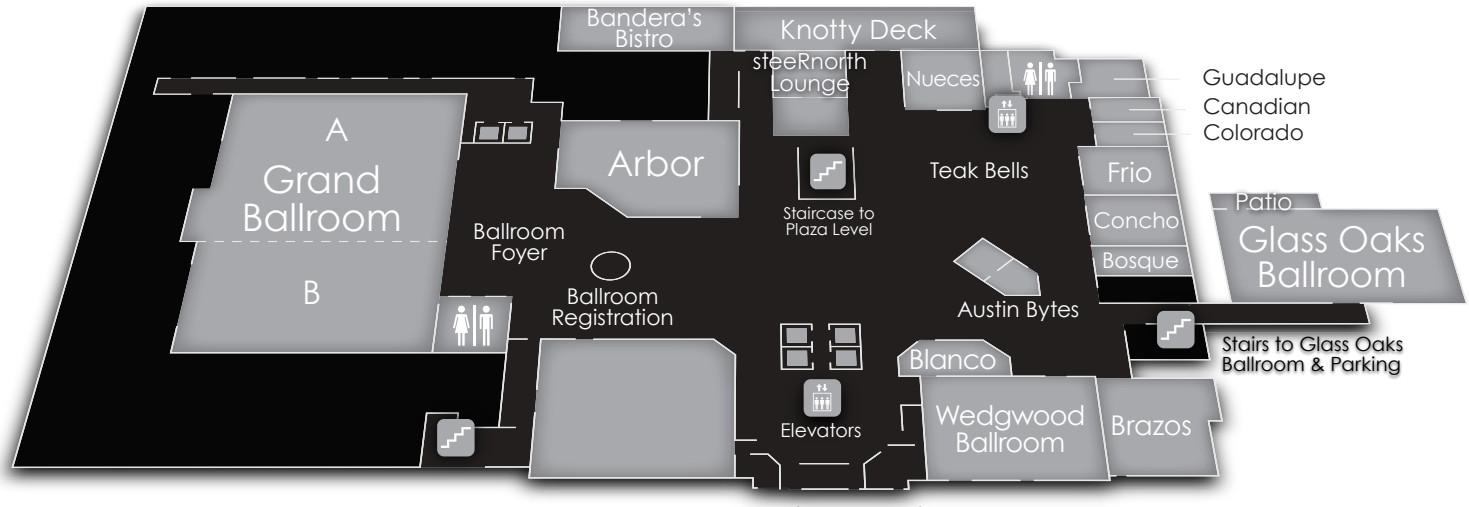
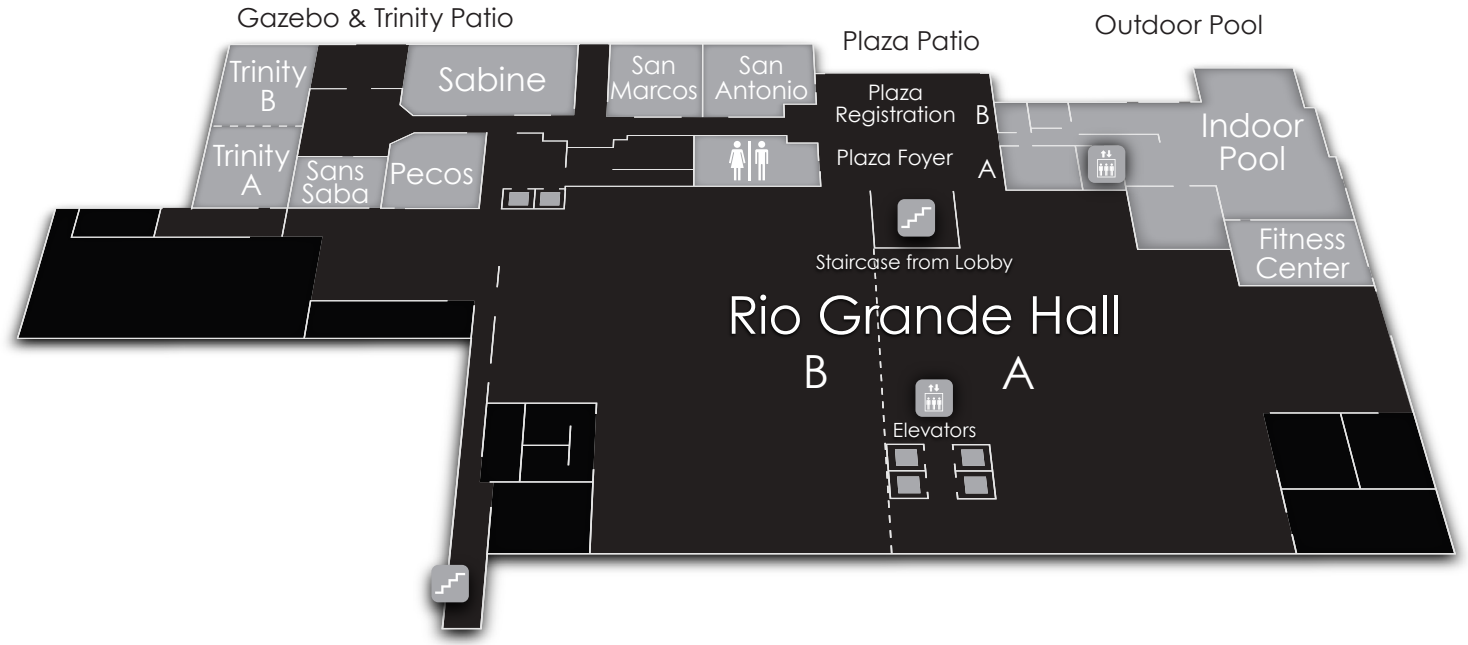
AUSTIN HOTEL

Atrium Level
(Lobby Level)



Plaza Level
(Lower Level)



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39th International Conference on Software Engineering

Call for Submissions ICSE 2017

Submission Dates

26-Aug-16	Technical Research Papers
07-Oct-16	Workshop Proposals
26-Oct-16	Software Engineering in Practice
26-Oct-16	Software Engineering Education and Training
26-Oct-16	New ideas and Emerging Results
26-Oct-16	Software Engineering in Society
18-Nov-16	Formal Demonstrations
18-Nov-16	Technical Briefings
18-Nov-16	Doctoral Symposium
28-Dec-16	Student Research Competition
09-Jan-17	Posters

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Call for Submissions

The International Conference on Software Engineering brings together researchers, practitioners and educators from around the world for a week of presentations and discussion around leading innovations, trends, outcomes and experiences in Software Engineering. For the first time in its nearly 40 years of history ICSE will be held in Latin America. Buenos Aires, the host city, is one of the most important business and cultural centres of the region. Renown as a cosmopolitan city that mixes a european atmosphere with its strong latin american roots, vibrant nightlife, tango, and incredible food and wine, Buenos Aires combined with ICSE makes an ideal destination to inspire and be inspired.

We invite you to help shape ICSE 2017 through the submission to one or more of our many tracks for professional engagement. In particular, we welcome submission of technical research papers; practice and experience papers; education papers; technical briefings; proposals for topical workshops, doctoral student research prospectuses, posters and formal demonstrations.

The technical research track invites submissions of high quality research papers that describe original and unpublished results on any topic of empirical or theoretical software engineering research. See the conference website for guidelines in all submission categories.

May 20-28, 2017

Buenos Aires, Argentina

2017.icse-conferences.org

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