ICST 2015

8th IEEE International Conference on
Software Testing, Verification and Validation

13 – 17 April 2015, Graz, Austria

IEEE computer society

IEEE

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Graz University of Technology

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Dear ICST 2015 Participant,

Welcome to the 8th edition of the IEEE International Conference on Software Testing, Verification and Validation. It is our great pleasure to host you this year in Graz. When strolling around the city center that is part of UNESCO'S World Cultural Heritage you will see a lot of marvelous historical places, complemented by contemporary buildings like the Kunsthaus (Graz Art Museum) with its enclosed Mur island (an accessible floating platform in the river Mur) that were built in 2003 to celebrate Graz serving as European Capital of Culture back then. The UNESCO City of Design Graz has always been open for novel ideas, contemporary architecture, arts and also design, never forgetting about its roots. Graz is not only a great place for arts and vacation, but is also a center of scientific endeavors. As early as 1585, Graz became a university town when the Universität Graz was founded. Also the oldest university of technology in Austria is located in Graz. The Technische Universität Graz was founded in 1811, and is still committed to excellence in research and teaching related to various technology-oriented fields and fostering strong connections with national as well as international industry and academia.

I sincerely hope that you will be enjoying ICST 2015. We have been working hard to offer you a great experience in Graz. Complementing our scientific program, there will be two social events. That is, the Welcome Reception will take place on Tuesday at the very conference venue, and on Wednesday we invite you to join us for the Banquet Dinner at the Alte Universität Graz.

It is our pleasure to host three excellent keynote speakers this year. With Mark Harman from University College London, and Helmut Veith from TU Wien, we have two excelling researchers that have been with the testing and verification community for a long time. Nick Green from Twitter will offer us new insights in the more practical view on our world of testing and verification, as experienced by major players in today's business. As will be evident from these keynotes, both, foundational research and evolvement of practical applications of testing, are essential for driving the advancement of our recent and important field in the domain of software engineering.

Attached to the conference are seven workshops targeting individual aspects of testing and quality assurance. I would like to thank the workshop chairs Mercedes G. Merayo and Eric Wong for their selection of this year's workshops. My thanks go also to the workshop organizers and all the people involved in making the workshops the substantial contribution to ICST that they are. I am convinced that an excellent workshop program is a key asset of a successful conference, allowing not only for presenting research but also providing a comfortable environment for detailed discussions among participants on focused topics.

For ICST's main research track, the program committee chaired by Gordon Fraser and Darko Marinov selected 32 papers for presentation out of 132 submissions. I would like to thank them for ensuring a fair and excellent reviewing process, which is certainly hard work for such a competitive conference as ICST. I am sure that every participant will find excellent papers catching their interest and stimulating new research that will lay the path for even more state-of-the-art ideas and solutions in testing, verification and validation. Complementing the main research track, we offer a track focusing on testing in practice that is chaired by Mihai Nica, Ina Schieferdecker and Tom Zimmerman. There is also a PhD Symposium, chaired by Arnaud Gottlieb and Sudipto Ghosh, and last but not least, a testing tools track chaired by Arcuri and Sigrid Eldh. Like the workshops, all these tracks have individual program committees and reviewing processes. I would like to thank all the respective program committee members and specifically their chairs for their hard work on selecting the papers.

My thanks go also to all the sponsors and supporters for their efforts and financial contributions. Last but not least, I would like to personally thank all the other people involved in carrying out ICST 2015, e.g., the members of the publicity committee chaired by Bernhard Aichernig, the financial chair Bernhard Peischl, the publication chair Birgit Hofer, the web chair Sina Shamshiri, and the members of the local organizing committee, for their passion, their involvement in discussions and their great and essential work.

I sincerely hope that you will enjoy ICST this year and that you will take a lot of new ideas back home with you. Thank you for coming and being part of ICST 2015, making it an event that we will all enjoy.

With best regards,

Franz Wotawa
(General Chair)

General Chair

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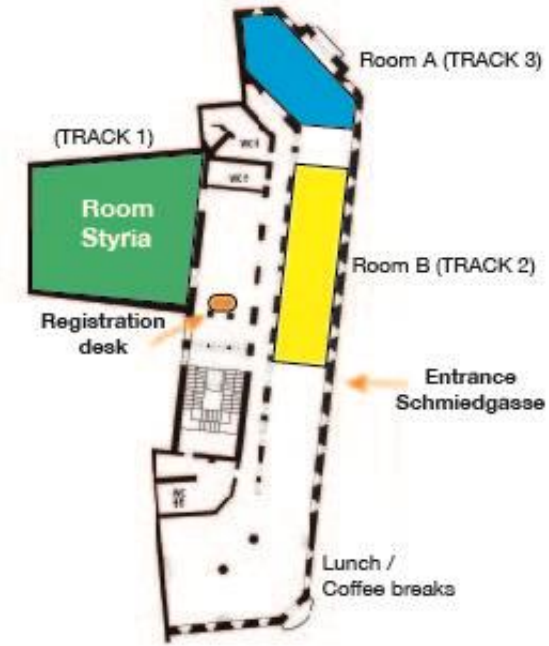


Floor plan ICST 2015 main conference
(see ICSTW 2015 floor plan workshop days)

Welcome Reception

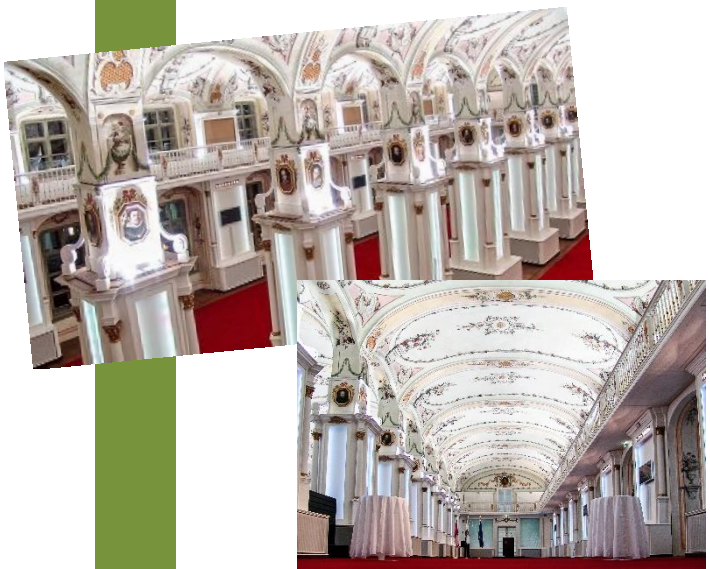
takes place in Congress Graz on April 14th at 6:00 pm

Social event

Banquet dinner

Wednesday, April 15th at 7:00 pm

Location:
Alte Universität, Hofgasse 14
(within a few minutes walking distance)



DAY 1 - Tuesday, April 14th

08:15 — **Registration**

08:45 — **Welcome**

09:00 — **Keynote 1 - Mark Harman / Chair: G. Fraser**
Achievements, open problems and challenges for search based software testing

10:30 — **Coffee Break**

11:00 — Track 1 - Room Styria — Test Generation 1 — Chair: H. Waeselynck

A. Panichella, F. M. Kifetew, P. Tonella
Reformulating Branch Coverage as a Many-Objective Optimization Problem

S. Mirshokraie, A. Mesbah, K. Pattabiraman
JSEFT: Automated JavaScript Unit Test Generation

S. Poulding, R. Feldt
Re-using Generators of Complex Test Data

11:00 — Track 2 - Room B — Static Analysis — Chair: A. Podgurski

Jing Xu, Yu Lei, R. Carver, D. Kung
A Lightweight, Static Approach to Detecting Unbounded Thread-Instantiation Loops

J. Midtgaard, A. Møller
QuickChecking Static Analysis Properties

S. Bardin, M. Delahaye, R. David, N. Kosmatov, M. Papadakis, Y. Le Traon, J. Marion
Sound and Quasi-Complete Detection of Infeasible Test Requirements

12:30 — **Lunch**

13:30 — Track 1 - Room Styria — Web and App Testing — Chair: Y. Labiche

D. Appelt, C. D. Nguyen, L. Briand
Behind an Application Firewall, Are We Safe from SQL Injection Attacks?

M. Leotta, A. Stocco, F. Ricca, P. Tonella
Using Multi-Locators to Increase the Robustnessof Web Test Cases

P. S. Kochhar, F. Thung, N. Nagappan, T. Zimmermann, D. Lo
Understanding the Test Automation Culture of App Developers

M. Wan, Y. Jin, D. Li, W. G. J. Halfond
Detecting Display Energy Hotspots in Android Apps

13:30 — Track 2 - Room B — Test Selection and Prioritisation — Chair: M. Felderer

D. Mondal, H. Hemmati, S. Durocher
Exploring Test Suite Diversification and Code Coverage in Multi-Objective Test Case Selection

H. Hemmati, Z. Fang, M. Mantyla
Prioritizing Manual Test Cases in Traditional and Rapid Release Environments

E. J. Rapos, J. Dingel
Using Fuzzy Logic & Symbolic Execution to Prioritize UML-RT Test Cases

S. Arlt, T. Morciniec, A. Podelski, S. Wagner
If A fails, can B still succeed? Inferring dependencies between test results in automotive system testing

15:30	**Coffee Break**		
16:00 Track 1 - Room Styria Model-based Testing Chair: P. Runeson	S. H. Jensen, S. Thummalapenta, S. Sinha, S. Chandra **Test Generation from Business Rules** E. Alégroth, E. Bache **On the Industrial Applicability of TextTest: An Empirical Case Study** P. Arcaini, A. Gargantini, P. Vavassori **Generating Tests for Detecting Faults in Feature Models**	**16:00** Track 2 - Room B Bug Bash	see local announcements
18:00	**Welcome Reception**		

NOTES:

DAY 2 - Wednesday, April 15th

08:15 — **Registration**

09:00 — **Keynote 2 - Helmut Veith / Chair: F. Wotawa**
Perspectives on White-Box Testing: Coverage, Concurrency, and Concolic Execution

10:30 — **Coffee Break**

11:00	Track 1 - Room Styria Model Checking & SAT Solving Chair: P. Ammann	H. Zhang, T. Aoki, Y. Chiba **Yes! You Can Use Your Model Checker to Verify OSEK/VDX Applications** K. C. Castillos, H. Waeselynck, V. Wiels **Show Me New Counterexamples: A Path-Based Approach** A. Yamada, T. Kitamura, C. Artho, Eun-Hye Choi, Y. Oiwa, A. Biere **Optimization of Combinatorial Testing by Incremental SAT Solving**	**11:00**	Track 2 - Room B Test Analysis Chair: J. Tretmans	D. Di Nardo, F. Pastore, L. Briand **Generating Complex and Faulty Test Data Through Model-Based Mutation Analysis** T. Pankumhang, M. Rutherford **Iterative Instrumentation for Code Coverage in Time-Sensitive Systems** N. Erman, V. Tufvesson, M. Borg, P. Runeson, A. Ardö **Navigating Information Overload Caused by Automated Testing - A Clustering Approach in Multi-Branch Development**	**11:00**	Track 3 - Room A PhD Symposium	see local announcements

12:30 — **Lunch**

13:30	Track 1 - Room Styria Test Generation 2 Chair: Y. Le Traon	Z. Bai, G. Shu, A. Podgurski **NUMFL: Localizing Faults in Numerical Software Using a Value-Based Causal Model** T. Huuhtanen, J. Itkonen, C. Lassenius **Combining Algebraic and Domain Testing to Design Adequate Test Cases for Signal Processing Algorithms**	**13:30**	Track 2 - Room B Testing Tools	T. Kobashi, N. Yoshioka, H. Kaiya, T. Okubo, M. Yoshizawa, H. Washizaki, Y. Fukazawa **TESEM: A Tool for Verifying Security Design Pattern Applications by Model Testing** B. K. Aichernig, H. Brandl, E. Jöbstl, W. Krenn, R. Schlick, S. Tiran **MoMuT::UML - Model-based Mutation Testing for UML**	**13:30**	Track 3 - Room A PhD Symposium	see local announcements

Track 1 - Room Styria
Test Generation 2
Chair: Y. Le Traon

T. Yu and M. B. Cohen
Guided Test Generation for Finding Worst-Case Stack Usage in Embedded Systems

Track 2 - Room B
Testing Tools

E. M. Rodrigues, M. Bernardino, L. Costa, A. F. Zorzo, F. Oliveira
PLeTsPerf - A Model-based Performance Testing Tool

D. Honfi, A. Vörös, Z. Micskei
SEViz: A Tool for Visualizing Symbolic Execution

S. Mahajan, W. G. J. Halfond
WebSee: A Tool for Debugging HTML Presentation Failures

Track 3 - Room A
PhD Symposium

see local announcements

15:00 **Coffee Break**

15:30

Track 1 - Room Styria
Panel

see local announcements

17:00

15:30

Track 3 - Room A
Testing in Practice

N. Li, A. Escalona, Y. Guo, J. Offutt
A Scalable Big Data Test Framework (30")

T. Noguchi, H. Washizaki, Y. Fukazawa, A. Sato, K. Ota
History-Based Test Case Prioritization for Black Box Testing on a New Product using Ant Colony Optimization (30")

M. Oriol
Testing Legacy Embedded Code: Landing on a Software Engineering Desert Island (15")

S. Ali, T. Yue
U-Test: Evolving, Modelling and Testing Realistic Uncertain Behaviours of Cyber-Physical Systems (15")

19:00 **Banquet Dinner**

DAY 3 - Thursday, April 16th

08:15	**Registration**		
09:00	**Keynote 3 - Nicholas (Nick) Green / Chair: D. Marinov** Testing in a large service based architecture, from unit testing to acceptance testing		
10:30	**Coffee Break**		
11:00 **Track 1 - Room Styria** **GUI Testing** **Chair: A. Memon**	V. Dantas, A. Blouin, B. Baudry **Classifying and Qualifying GUI Defects** E. Alégroth, Z. Gao, R. A. P. Qliveira, A. Memon **Conceptualization and Evaluation of Component-baxed Testing Unified with Visual GUI Testing: an Empirical Study** S. Mahajan, W. G. J. Halfond **Detection and Localization of HTML Presentation Failures Using Computer Vision-Based Techniques**	**11:00** **Track 2 - Room B** **Testing Tools**	R. Carbone, L. Compagna, A. Panichella, S. E. Ponta **Security Threat Identification and Testing** S. Hallé, N. Bergeron, F. Guérin, G. Le Breton **Testing Web Applications Through Layout Constraints** S. Herbold, A. De Francesco, J. Grabowski, P. Harms, L. M. Hillah, F. Kordon, A.-P. Maesano, L. Maesano, C. Di Napoli, F. De Rosa, M. A. Schneider, N. Tonellotto, M.-C. Wendland, P.-H. Wuillemin **The MIDAS Cloud Platform for Testing SOA Applications** D. Werner **Fluently reading, writing and speaking hexadecimal with Gepetto´s help**	**11:00** **Track 3 - Room A** **Testing in Practice 2**	D. Künzle, C. Worms **A Virtual Bank For Development And Testing (30")** R. Korosec, R. Pfarrhofer **Supporting the Transition to an Agile Test Matrix (30")** C. El Salloum **Seamless Integration of Test Information Management and Calibration Data Management in the Overall Automotive Development Process (15")** E. Holleis **Integrating Concolic Testing into an Industrial Embedded Software Development Workflow (15")**
12:30	**Lunch**		

13:30

Track 1 - Room Styria
Symbolic Execution
Chair: B. Aichernig

L. Cseppentó, Z. Micskei
Evaluating Symbolic Execution-based Test Tools

Q. Yi, Z. Yang, S. Guo, C. Wang, J. Liu, C. Zhao
Postconditioned Symbolic Execution

C. Nguyen, H. Yoshida, M. Prasad, I. Ghosh, K. Sen
Generating Succinct Test Cases using Don´t Care Analysis

13:30

Track 2 - Room B
Tool Demo

Demonstration of Testing Tools

13:30

Track 3 - Room A
Testing in Practice 3

M. D. Tokcan, O. Ozturk, H. Tuna
MetTest: A Test Automation Framework for Development of a Point-to-Multipoint Radio (30")

G. Brajnik, A. Baruzzo, S. Fabbro
Model-based Continuous Integration Testing or Responsiveness of Web Aplications (30")

A. Santos, I. Correia
Mobile Testing in Software Industry using Agile: Challenges and Opportunities (15")

S. Mohacsi, M. Felderer, A. Beer
A Case Study on the Efficiency of Model-Based Testing at the European Space Agency (15")

15:00 **Coffee Break**

15:30

Track 1 - Room Styria
Open SC Meeting

Open Steering Committee Meeting

17:30

15:30

Track 2 - Room B
ASQT - Scaling Agility

R. Brenner, S. Wunder
Scaled Agile Framework: Presentation and Real World Example

A. Janes
A Guide to Lean Software Development in Action

W. Richter
PMBOK vs. Agile Methods: How Cultural Change can become Transparent

15:30

Track 3 - Room A
ASQT - Dependable Systems

S. Puri-Jobi
Test Automation of NFC ICs using Jenkins and NUnit

W. Vorraber, G. Lichtenegger, D. Neuchbacher, S. Vössner
Designing sustainable information systems for organizations operating in safety critical environments

P. Kieseberg, P. Frühwirt, E. Weippl, S. Schrittwieser
Security Tests for Mobile Applications - Why using TLS/SSL is not enough