



TECHNISCHE
UNIVERSITÄT
WIEN



Business
Informatics
Group



**OESTERREICHISCHE
COMPUTER GESELLSCHAFT**
AUSTRIAN
COMPUTER SOCIETY

ZIF

Zentrum für Informatik Forschung

STAF 2016

4-8 July 2016, Vienna, Austria

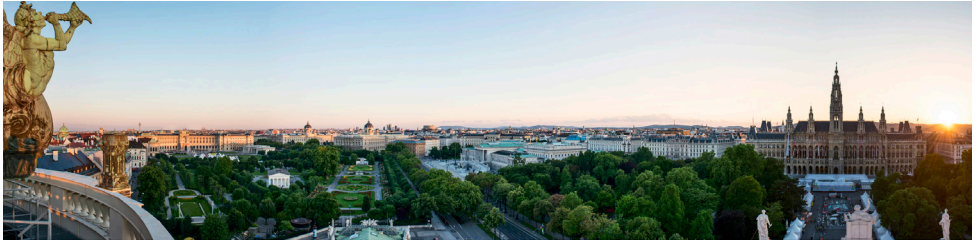
SOFTWARE TECHNOLOGIES:
APPLICATIONS AND FOUNDATIONS

Conference Program

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Welcome to STAF 2016



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We cordially welcome you to the 4th edition of the STAF federate scientific event on Software Technologies: Applications and Foundations at TU Wien in Vienna, Austria.

STAF is a federation of leading conferences on software technologies. It provides a loose umbrella organization for conferences on software technologies, supported by a steering committee that ensures continuity.

It is a great pleasure for us to host STAF this year at TU Wien in Vienna, Austria. TU Wien is located in the heart of Europe, in a cosmopolitan city of great cultural heritage and diversity. TU Wien looks back on a successful 200 years lasting history. It is among the most successful technical universities in Europe and the largest technical scientific and educational institution of Austria.

Over 5 days, STAF 2016 will host 16 events devoted to applications and foundations of software technologies. We are very happy that the conferences ECMFA, ICGT, ICMT, and TAP, as well as the long-running transformation tool contest TTC continue their participation in STAF also this year, and warmly welcome the conference SEFM at STAF 2016. STAF 2016 also continues its Doctoral Symposium, as well as the Projects Showcase event initiated last year in L'Aquila. Furthermore, eight workshops devoted to specialized topics of software technologies take part in STAF 2016. STAF 2016 features eight internationally renowned keynote speakers sharing their deep insights on future challenges and trends in software technologies.

We would like to express our gratitude to all the institutions and sponsors that supported STAF 2016. Many thanks go to all the chairs, organizers, steering committee members, program committee members, external reviewers, and local volunteers for their hard work in organizing the conferences and satellite events of STAF 2016. We also thank the keynote speakers, authors, presenters, and participants who contribute with their work and participation to the success of STAF 2016.

Enjoy the conference, the food, the hospitality of TU Wien, and the beautiful and charming environment of the city of Vienna!

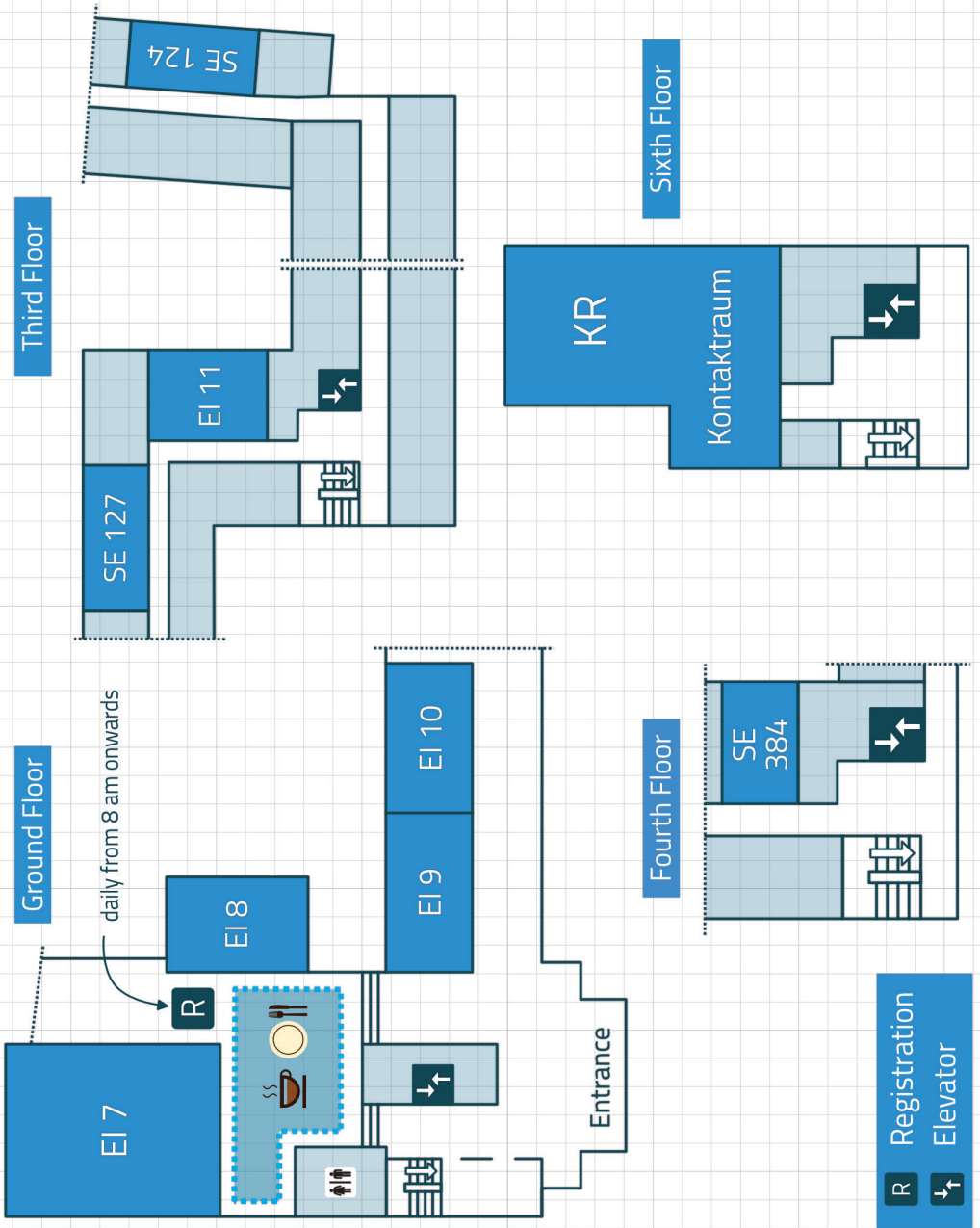
Note on the Conference Proceedings

The conference proceedings of the STAF 2016 conferences are online available at the Springer digital library SpringerLink. At the registration desk there is also a small amount of USB sticks available with copies of the proceedings.

Program Overview

Day	09:00 – 10:30	11:00 – 13:00	14:00 - 15:30	16:00 – 18:00	Social Events
Monday July 4	ICMT Keynote SE 124 EI 8 SE 384 SE 127 EI 11 KR	ICMT Session 1 GCM HOFM MELO SEMS VeryComp	ICMT Session 2 Doctoral Symposium GCM HOFM MELO SEMS	ICMT Session 3 Doctoral Symposium GCM HOFM MELO SEMS	18:00 Welcome Reception TU Wien, KR
Tuesday July 5	ICGT Keynote Room E17 EI 9 EI 10 EI 7 EI 8	ICMT Session 4 ICGT Session 1 SEFM Session 1	TAP Keynote Room E17	ICMT Session 5 ICGT Session 2 SEFM Session 2 TAP Session 1	18:30 Banquet Weingut am Reisenberg
Wednesday July 6	SEFM Keynote 1 EI 9 EI 10 EI 7 EI 8	ECMIFA Session 1 ICGT Session 3 SEFM Session 3 TAP Session 2	SEFM Keynote 2	ECMIFA Session 2 ICGT Session 4 SEFM Session 4 TAP Session 3	19:00 Mayor's Reception City Hall
Thursday July 7	ECMIFA Keynote Room E17 EI 9 EI 8 EI 7 KR	ECMIFA Session 3 TAP Session 4 SEFM Session 5 Projects Showcase	ECMIFA Session 4 TAP Industrial Keynote Room E17 Projects Showcase	ECMIFA Industrial Keynote Session 5 SEFM Session 6	18:00 Cocktail Reception TU Wien, KR
Friday July 8	TTC BigMDE DataMod FORECAST EI 8 KR SE 127 EI 11	TTC BigMDE DataMod FORECAST	TTC BigMDE DataMod FORECAST	TTC DataMod FORECAST	

Venue Overview



Detailed Program - Monday

09:00 - 10:30 | ICMT Opening and Keynote

Juan de Lara

Approaches to model transformation reuse: From concepts to a-posteriori typing

HOFM Session 1

Keynote

10:30 - 11:00 | Coffee Break

11:00 - 13:00 | ICMT Session 1: Model Transformation Languages (until 12:30)

Adolfo Sánchez-Barbudo Herrera, Richard Paige and Edward Willink

A Domain Specific Transformation Language to Bridge Concrete and Abstract Syntax

Paul Klint and Tijs Van Der Storm

Model Transformation with Immutable Data

Saheed Popoola, Dimitrios Kolovos and Horacio Rodriguez

EMG: A Domain-Specific Transformation Language for Synthetic Model Generation

GCM Session 1 (until 12:30)

Frank Drewes, Berthold Hoffmann and Mark Minas

Approximating Parikh Images for Generating Deterministic Graph Parsers

Detlef Plump and Ivaylo Hristakiev

Attributed Graph Transformation via Rule Schemata: Church-Rosser Theorem

Andrea Corradini

On the definition of parallel independence in the algebraic approaches to graph rewriting

HOFM Session 2

Paolo Arcaini, Silvia Bonfanti, Angelo Gargantini and Elvinia Riccobene

Visual notation and patterns for Abstract State Machines

Ulyana Tikhonova, Maarten Manders and R.C. Boudewijns

Visualization of Formal Specifications for Understanding and Debugging an Industrial DSL

Phan Vo, Maria Spichkova

Model-based generation of natural language specifications

Khanh-Hoang Doan, Martin Gogolla and Frank Hilken

Towards a Developer-Oriented Process for Verifying Behavioral Properties in UML and OCL Models

MELO Session 1

Keynote

Zinovy Diskin and Harald König

Incremental Consistency Checking of Heterogeneous Multimodels

SEMS Session 1 (until 12:40)

Sumit Gulwani

Keynote: Spreadsheet Programming Using Examples

Ricardo Teixeira and Vasco Amaral

On the emergence of Patterns for Spreadsheets Data Arrangements

VeryComp

Marina Mongiello, Tommaso Di Noia, Francesco Nocera, Eugenio Di Sciascio and Angelo Parchitelli

Context-aware design of reflective middleware in the Internet of Everything

Amleto Di Salle, Francesco Gallo and Claudio Pompilio

Composition of advanced (μ)services for the next generation of the Internet of Things

Julia Désirée Krämer and Heike Wehrheim

A Formal Approach to Error Localization and Correction in Service Compositions

Mirko D'Angelo and Mauro Caporuscio

Pure Edge Computing Platform for the Future Internet

12:30 - 14:00

Lunch Break

14:00 - 15:30

ICMT Session 2: Model Transformation Tools

Erik Burger and Oliver Schneider

Translatability and Translation of Updated Views in ModelJoin

Juri Di Rocco, Davide Di Ruscio, Alfonso Pierantonio, Jesús Sánchez Cuadrado, Juan De Lara and Esther Guerra

Using ATL transformation services in the MDEForge collaborative modeling platform

Martin Fleck, Javier Troya and Manuel Wimmer

Search-Based Model Transformations with MOMoT (Tool Demonstration Paper)

Doctoral Symposium Session 1: Students' Presentations

Hessa Alfraihi

Towards Improving Agility in Model-driven Development

supported by

Patrick Neubauer

Towards Model-Driven Software Language Modernization

 **FAKTOR ZEHN**

Christian Schenk

Model-based Decoder Specifications for the Long-Term Preservation of Video Content

GCM Session 2

Mohammed Alabdullatif and Reiko Heckel

Graph Transformation Games for Negotiating Features

Marisa Navarro, Fernando Orejas, Elvira Pino and Leen Lambers

A Logic of Graph Conditions Extended with Paths

Michael Löwe

SPO-Rewriting of Constrained Partial Algebras

HOFM Session 3

Antonio Cerone

Human-Oriented Formal Modelling of Human-Computer Interaction: Practitioners' and Students' Perspectives

Maria Spichkova

"Boring formal methods" or "Sherlock Holmes deduction methods"?

Peter Herrmann and Jan Olaf Blech

Formal Model-based Development in Industrial Automation with Reactive Blocks

Nasser Alzahrani, Maria Spichkova and Jan Olaf Blech

Spatio-temporal model for property based testing

MELO Session 2

Juan M. Rivas, J. Javier Gutiérrez, Mario Aldea, César Cuevas, Michael González Harbour, José M. Drake, Julio L. Medina, Laurent Rioux, Rafik Henia and Nicolas Sordon

An Experience Integrating Response-Time Analysis and Optimization with an MDE Strategy

Steffen Zschaler and Lawrence Mandow

Towards Model-Based Optimisation: Using domain knowledge explicitly

Raphael Chenouard, Chris Hartmann, Alain Bernard and Emmanuel Mermoz

Computational Design Synthesis using Model-Driven Engineering and Constraint Programming

SEMS Session 2

Jorge Mendes, Kha N. Do and João Saraiva

Towards an Automated Classification of Spreadsheets

Jerzy Sikora, Jacek Sroka and Jerzy Tyszkiewicz

Programming Communication with the User in Multiplatform Spreadsheet Applications

Thomas Schmitz, Birgit Hofer, Dietmar Jannach and Franz Wotawa

Fragment-Based Diagnosis of Spreadsheets

15:30 - 16:00

Coffee Break

16:00 - 18:00

ICMT Session 3: Developing Model Transformations (until 17:30)

Frank Trollmann and Sahin Albayrak

Extending Model Synchronization Results from Triple Graph Grammars to Multiple Models

Rick Salay, Steffen Zschaler and Marsha Chechik

Correct Reuse of Transformations is Hard to Guarantee

Sobhan Yassipour Tehrani, Steffen Zschaler and Kevin Lano

Requirements Engineering in Model-Transformation Development: An Interview-Based Study

Doctoral Symposium Session 2: Feedback and Discussion (until 17:30)

supported by

Convista **FAKTOR** **ZEHM**

GCM Session 3 (until 17:30)

Jan Steffen Becker

An Automata-Theoretic Approach to Instance Generation

Jamal Hussein, Vladimiro Sassone and Luc Moreau

Template-Based Graph Transformation System for the PROV Data Model

Nadezhda Baklanova, Jon Haël Brenas, Amani Makhlouf, Christian Percebois, Martin Strecker and Hanh Nhi Tran

Coding, Executing and Verifying Graph Transformations with small-tALCQe

HOFM Session 4

Discussion

MELO Session 3

Panel Discussion

SEMS Session 3

Felienne Hermans and Tijs Van Der Storm

TrueGrid: Code the Table, Tabulate the Data

Martin Gogolla and Antonio Vallecillo

Views on UML Interactions as Spreadsheet Queries

Paul Mireault

Implementing Nested FOR Loops as Spreadsheet Formulas

Ricardo Moreira

SheetGit: a tool for collaborative spreadsheet development

General Discussion

18:00 **Welcome Reception, KR Kontaktraum**

Detailed Program - Tuesday

09:00 - 10:30 **ICGT Opening and Keynote**

Hans-Jörg Kreowski

The Graph Transformation Community Mourns for Hartmut Ehrig (1944 - 2016)

Juergen Dingel

Complexity is the Only Constant: Trends in Computing and Their Relevance to Model Driven Engineering

10:30 - 11:00 **Coffee Break**

11:00 - 13:00 **ICMT Session 4: Applications of Model Transformations (until 12:30)**

Reiner Jung, Robert Heinrich and Wilhelm Hasselbring

GECCO: A Generator Composition Approach for Aspect-Oriented DSLs

Arjan Mooij, Mabel Joy, Gernot Eggen, Paul Janson and Andrei Radulescu

Industrial Software Rejuvenation using Open-Source Parsers

Timo Kehrer, Gabriele Taentzer, Michaela Rindt and Udo Kelter

Automatically Deriving the Specification of Model Editing Operations from Meta-Models

ICGT Session 1: Foundations (until 12:30)

Michael Löwe

Sesqui-Pushout Rewriting with Type Refinements

Andrea Corradini, Dominique Duval, Frederic Prost and Leila Ribeiro

Parallelism in AGREE Transformations

Julia Padberg and Alexander Schulz

Model Checking Reconfigurable Petri Nets with Maude

SEFM Session 1: Concurrency and Non-Interference (until 12:45)

Oliver Schwarz and Mads Dam

Automatic Derivation of Platform Noninterference Properties

Simon Doherty and John Derrick

Linearizability and Causality

Nils Jähnig, Thomas Göthel and Sabine Glesner

Refinement-based verification of Communicating Unstructured Code

Josselin Feist, Mounier Laurent and Marie-Laure Potet

Guided Dynamic Symbolic Execution Using Subgraph Control-Flow Information (Short Paper)

12:30 - 14:00 **Lunch Break**

14:00 - 15:30 **TAP Opening and Keynote**

Kim G. Larsen

From Testing and Verification to Performance Analysis and Synthesis of Cyber-Physical Systems

15:30 - 16:00 **Coffee Break**

16:00 - 18:00

ICMT Session 5: Looking Ahead (until 17:30)

Daniel Strüber, Jennifer Plöger and Vlad Acretoiaie

Clone Detection for Graph-Based Model Transformation Languages

Panel

Juan de Lara, Juergen Dingel, Kim G. Larsen, Gul Agha, Erika Ábrahám, Krzysztof Czarnecki, Klaus Reichl

Humans-in-the-Loop? The role of humans in providing high-quality software systems

Gregor Engels and Pieter Van Gorp

Closing

ICGT Session 2: Tools & Algorithms

Jakob L. Andersen, Christoph Flamm, Daniel Merkle and Peter F. Stadler

A Software Package for Chemically Inspired Graph Transformation

Kristopher Born and Gabriele Taentzer

An Algorithm for the Critical Pair Analysis of Amalgamated Graph Transformations

Christopher Bak and Detlef Plump

Compiling Graph Programs to C

Daniel Strüber and Stefan Schulz

A Tool Environment for Managing Families of Model Transformation Rules

SEFM Session 2: Program Analysis

Oana Fabiana Andreescu, Thomas Jensen and Stéphane Lescuyer

Correlating Structured Inputs and Outputs in Functional Specifications

Tuba Yavuz

Combining Predicate Abstraction with Fixpoint Approximations

Jaroslav Bendík, Nikola Benes, Jiri Barnat and Ivana Cerna

Finding Boundary Elements in Ordered Sets with Application to Safety and Requirements Analysis

Christian Dernehl, Norman Hansen and Stefan Kowalewski

Combining Abstract Interpretation with Symbolic Execution for a Static Value Range Analysis of Block Diagrams

TAP Session 1 (until 17:30)

Shaoying Liu

Testing-Based Formal Verification for Theorems and Its Application in Software Specification Verification

James Cheney, Alberto Momigliano and Matteo Pessina

Advances in Property-Based Testing for alphaProlog

Franck Slama

Automatic Predicate Testing in Formal Certification (Short Paper)

18:30 **Banquet, Weingut am Reisenberg**

Detailed Program - Wednesday

09:00 - 10:30 **SEFM Keynote 1**

Gul Agha

Abstractions, Semantic Models and Analysis Tools for Concurrent Systems: Progress and Open Problems

10:30 - 11:00 **Coffee Break**

11:00 - 13:00 **ECMFA Session 1: Multi- and Many Models**

Önder Babur, Loek Cleophas and Mark van den Brand

Hierarchical Clustering of Metamodels for Comparative Analysis and Visualization

Harald Koenig and Zinovy Diskin

Local Checking of Global Consistency in Heterogeneous Multimodeling

Jad El-Khoury, Cecilia Ekelin and Christian Ekholm

Supporting the Linked Data Approach to Maintain Coherence across Rich EMF Models

Antonio Garcia-Dominguez, Dimitris Kolovos, Konstantinos Barmpis, Ran Wei and Richard Paige

Stress-Testing Centralised Model Stores

ICGT Session 3: Queries (until 12:30)

Zoltán Ujhelyi, Gábor Bergmann and Dániel Varró

Rete Network Slicing for Model Queries

Christian Krause, Daniel Johannsen, Radwan Deeb, Kai-Uwe Sattler, David Knacker and Anton Niadzelka

An SQL-Based Query Language and Engine for Graph Pattern Matching

Thomas Beyhl, Dominique Blouin, Holger Giese and Leen Lambers

On the Operationalization of Graph Queries with Generalized Discrimination Networks

SEFM Session 3: Model Checking (until 12:45)

Idress Husien and Sven Schewe

Program Generation using Simulated Annealing and Model Checking

Peter Bezděk, Nikola Beneš, Jiří Barnat and Ivana Černá

LTL Parameter Synthesis of Parametric Timed Automata

Graeme Smith

Model checking simulation rules for linearizability

Ivaylo Dobrikov, Daniel Plagge and Michael Leuschel

LTL Model Checking under Fairness in ProB (Short Paper)

TAP Session 2 (until 12:30)

Guillaume Petiot, Nikolai Kosmatov, Bernard Botella, Alain Giorgetti and Jacques Julliard

Your Proof Fails? Testing Helps to Find the Reason

Andreas Podelski, Martin Schäf and Thomas Wies

Classifying Bugs with Interpolants

Salvador Tamarit, Adrian Riesco, Enrique Martin-Martin and Rafael Caballero

Debugging Meets Testing in Erlang (Tool Demonstration)

12:30 - 14:00 **Lunch Break**

14:00 - 15:30 **SEFM Keynote 2**

Erika Ábrahám

Satisfiability Checking: Theory and Applications

15:30 - 16:00 **Coffee Break**

16:00 - 18:00 **ECMFA Session 2: Language Engineering (until 17:30)**

Robert Heim, Pedram Mir Seyed Nazari, Bernhard Rumpe and Andreas Wortmann

Compositional Language Engineering using Generated, Extensible, Static Type-Safe Visitors

Colin Atkinson and Thomas Kuehne

Demystifying Ontological Classification in Language Engineering

Jesús J. López Fernández, Antonio Garmendia, Esther Guerra and Juan De Lara

Example-based generation of graphical modelling environments

ICGT Session 4: Applications

Roland Kluge and Anthony Anjorin

The Incremental Advantage: Evaluating the Performance of a TGG-based Visualisation Framework

Christoph Flamm, Daniel Merkle, Peter F. Stadler and Uffe Thorsen

Automatic Inference of Graph Transformation Rules Using the Cyclic Nature of Chemical Reactions

David Priemer, Tobias George, Marcel Hahn, Lennert Raesch and Albert Zündorf

Using Graph Transformation for Puzzle Game Level Generation and Validation

Hans-Jörg Kreowski, Sabine Kuske, Aaron Lye and Caroline von Totth

Graph Transformation Meets Reversible Circuits: Model Transformation and Optimization

SEFM Session 4: Verification

David Hauzar, Claude Marché and Yannick Moy

Counterexamples from Proof Failures in SPARK

Jera Hensel, Jürgen Giesl, Florian Frohn and Thomas Ströder

Proving Termination of Programs with Bitvector Arithmetic by Symbolic Execution

Paolo Arcaini, Angelo Gargantini and Elvinia Riccobene

SMT-based automatic proof of ASM model refinement

Ke Zhang and Zongyan Qiu

Coq Implementation of OO Verification Framework Verij (Short Paper)

Peter Zeller and Arnd Poetzsch-Heffter

Towards a Proof Framework for Information Systems with Weak Consistency (Short Paper)

TAP Session 3 (until 17:00)

Achim D. Brucker and Burkhart Wolff

Monadic Sequence Testing and Explicit Test-Refinements

Hermann Felbinger, Ingo Pill and Franz Wotawa

Classifying Test Suite Effectiveness via Model Inference and ROBBDS

19:00 **Mayor's Reception, City Hall**

Detailed Program - Thursday

09:00 - 10:30 **ECFMA Keynote**

Krzysztof Czarnecki

A Model-Based Driver's License for Self-Driving Cars: Challenges and Future Directions

10:30 - 11:00 **Coffee Break**

11:00 - 13:00 **ECMFA Session 3: UML and Meta-Modeling**

Céline Bensoussan, Jörg Kienzle and Matthias Schöttle

Associations in MDE: A Concern-Oriented, Reusable Solution

Wael Kessentini, Houari Sahraoui and Manuel Wimmer

Automated Metamodel/Model Co-Evolution using a Multi-Objective Optimization Approach

Massimo Tisi, Frédéric Jouault, Zied Saidi and Jérôme Delatour

Enabling OCL and fUML Integration by Transformation

Matthieu Allon, Gilles Vanwormhoudt, Bernard Carré and Olivier Caron

Isolating and Reusing Template Instances in UML

TAP Session 4 (until 12:30)

Catherine Dubois, Alain Giorgetti and Richard Genestier

Tests and Proofs for Enumerative Combinatorics

Sebastian Gabmeyer and Martina Seidl

Lightweight Symbolic Verification of Graph Transformations with Off-The-Shelf Hardware Model Checkers

Amani Makhoulouf, Hanh Nhi Tran, Christian Percebois and Martin Strecker

Combining Dynamic and Static Analysis to Help Develop Correct Graph Transformations (Short Paper)

SEFM Session 5: Interaction and Adaptation (until 12:45)

Antonio Cerone

A Cognitive Framework based on Rewriting Logic for the Analysis of Interactive Systems

Anshul Gupta, Sven Schewe, Ashutosh Trivedi, Maram Sai Krishna Deepak and Bharath Kumar Padarathi

Incentive Stackelberg Mean-payoff Games

Carlos Canal and Gwen Salaün

Stability-based Adaptation of Asynchronously Communicating Software

Shaun Azzopardi, Christian Colombo, Gordon Pace and Brian Vella

Compliance Checking in the Open Payments Ecosystem (Short Paper)

Projects Showcase Session 1

Tanja E. J. Vos and Anna I Esparcia Alcazar

Software Testing Innovation Alliance - the SHIP project

Hans Vangheluwe, Vasco Amaral, Holger Giese, Jan Broenink, Bernhard Schaetz, Alexander

Norta, Paulo Carreira, Ivan Lukovic, Tanja Mayerhofer, Manuel Wimmer and Antonio Vallecillo

MPM4CPS: Multi-Paradigm Modelling for Cyber-Physical Systems

Malgorzata Z. Goraczek and Peter Parycek

SmartGov - Advanced decision support for Smart Governance

Michael Ilger and Michael Halwax

CISL - Core Insurance Service Layer

12:30 - 14:00 **Lunch Break**

14:00 - 15:30 **ECMFA Session 4: Experience Reports and Case Studies**

Shuai Wang, Hong Lu, Tao Yue, Shaukat Ali and Jan F Nygård

MBF4CR: A Model-Based Framework for Supporting An Automated Cancer Registry System

Markus Scheidgen, Sven Efftinge and Frederik Marticke

Metamodeling vs Metaprogramming: A Case Study on Developing Client Libraries for REST APIs

Georg Hinkel, Oliver Denninger, Sebastian Krach and Henning Groenda

Experiences with Model-driven Engineering in Neurorobotics

TAP Industrial Keynote

Klaus Reichl

Using Formal Methods for Verification and Validation in Railway

Projects Showcase Session 2

Martin Krammer, Nadja Marko and Martin Benedikt

Interfacing Real-Time Systems for Advanced Co-Simulation – The ACOSAR Approach

Gorazd Marinic and Wim Vanobberghen

ECIM: European Cloud Marketplace for Intelligent Mobility

Dimitris Kolovos, Antonio Garcia-Dominguez, Richard Paige, Esther Guerra, Jesús Sánchez Cuadrado, Juan De Lara, Istvan Rath, Daniel Varro, Gerson Sunyé and Massimo Tisi

MONDO: Scalable Modelling and Model Management on the Cloud

15:30 - 16:00 **Coffee Break**

16:00 - 18:00 **ECMFA Industrial Keynote (16:00 - 17:00)**

Stefan Voget

Usage of domain specific modeling languages in the automotive industry

ECMFA Session 5: Variability and Uncertainty (17:00 - 18:00)

Davide Di Ruscio, Juergen Ettlstorfer, Ludovico Iovino, Alfonso Pierantonio and Wieland Schwinger

Supporting variability exploration and resolution during model migration

Man Zhang, Bran Selic, Shaukat Ali, Tao Yue, Oscar Okariz and Roland Norgren

Understanding Uncertainty in Cyber-Physical Systems: A Conceptual Model

SEFM Session 6: Development Methods

Adrien Champion, Arie Gurfinkel, Temesghen Kahsai and Cesare Tinelli

CoCoSpec: A mode aware contract language

Antoine El-Hokayem, Ylies Falcone and Mohamad Jaber

Modularizing Crosscutting Concerns in Component-Based Systems

Alessandro Cimatti, Ramiro Demasi and Stefano Tonetta

Tightening a Contract Refinement

Lukas Ladenberger and Michael Leuschel

BMotionWeb: A Tool for Rapid Creation of Formal Prototypes

18:00 **Cocktail Reception, KR Kontaktraum**

Detailed Program - Friday

09:00 - 10:30

TTC Session 1

Introduction to the Class Responsibility Assignment case study

Georg Hinkel
NMF

András Szabolcs Nagy et al.
VIATRA

Kevin Lano et al.
UML-RSDS

Leif Arne Johnsen et al.
ATL/Java

BigMDE Session 1

Invited Talk

DataMod Session 1

Mirco Musolesi

Mining Big (and Small) Mobile Data for Social Good (Invited Talk)

FORECAST Session 1

Adeline Uhrmacher

Modeling and simulation of collective adaptive systems - a case for self-adaptive software and domain specific languages

Alessandro Aldini

A Formal Framework for Modeling Trust and Reputation in Collective Adaptive Systems

10:30 - 11:00

Coffee Break

11:00 - 13:00

TTC Session 2 (until 12:30)

Maximiliano Vela et al.
Excel

Christoph Eickhoff et al.
SDMLib

Alexandru Burdusel et al.
MDEOptimiser

Kristopher Born et al.
Henshin

Filip Krikava
SIGMA

BigMDE Session 2

Matthias Sedlmeier and Martin Gogolla

Towards Flexible Model Analysis and Constraint Development: A Small Study Based on Large Real-Life Data

Markus Scheidgen

Evaluation of Model Comparison for Delta-Compression in Model Persistence

Christian Schenk, Sonja Schimmler and Uwe Borghoff

Model-driven Video Decoding: An Application Domain for Model Transformations

Edward Willink

Optimized declarative transformation - First Eclipse QVTc results

DataMod Session 2

Riccardo Guidotti, Giulio Rossetti and Dino Pedreschi

Audio Ergo Sum: A Personal Data Model For Musical Preferences

Mohamed Aymen, Ben Hajkacem, Chiheb Eddine Ben N'Cir and Nadia Essoussi

An Accelerated MapReduce-based K-prototypes for Big Data

Antonio Cerone

Refinement Mining: Using Data to Sift Plausible Models

Daniel Reijsbergen

Probabilistic Modelling of Station Locations in Bicycle-Sharing Systems

FORECAST Session 2

Gul Agha

Probabilistic Programming, Estimation, and Euclidean Model Checking for Aggregate Behavior of Concurrent Systems

Stephen Gilmore

Data as processes: introducing measurement data into CARMA models

Natalia Zoń, Vashti Galpin and Stephen Gilmore

Modelling movement for collective adaptive systems with CARMA

12:30 - 14:00

Lunch Break

14:00 - 15:30

TTC Session 3: Presentations of solutions to the live contest

BigMDE Session 3

Daniel Strüber, Timo Kehrer, Thorsten Arendt, Christopher Pietsch and Dennis Reuling

Scalability of Model Transformations: Position Paper and Benchmark Set

Daniel Strüber, Stefan Jurack, Tim Schäfer, Stefan Schulz and Gabriele Taentzer

Managing Model and Meta-Model Components with Export and Import Interfaces

Discussion and Wrap-Up

DataMod Session 3

Emanuela Merelli

The Topological Field Theory of Data: a program towards a novel strategy for data mining through data language (Invited Talk)

Nieves Atienza, Rocio Gonzalez-Diaz and Matteo Rucco

Separating Topological Noise from Features using Persistent Entropy

FORECAST Session 3

Diego Latella

On Formal Methods for Collective Adaptive System Engineering. {Scalable Approximated, Spatial} Analysis Techniques

Mirco Tribastone

Challenges in Quantitative Abstractions for Collective Adaptive Systems

15:30 - 16:00

Coffee Break

16:00 - 18:00

TTC Awards and Wrap-Up (until 16:30)

DataMod Session 4

Giovanni Pardini and Paolo Milazzo

A High-Level Model Checking Language with Compile-time Pruning of Local Variables

Martyn Ellison, Radu Calinescu and Richard Paige

Towards Platform Independent Database Modelling in Enterprise Systems

Panel Discussion and Closing

FORECAST Session 4

Mirko Viroli

Resiliency once and for all with Aggregate Computing

Paul Pihó and Jane Hillston

Stochastic and Spatial Equivalence for PALOMA

Gina Belmonte, Vincenzo Ciancia, Diego Latella and Mieke Massink

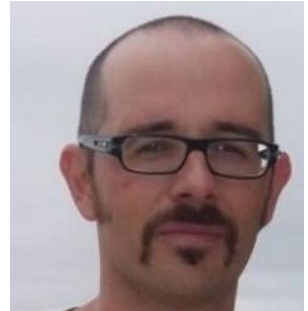
From Collective Adaptive Systems to Human Centric Computation and Back: Spatial Model Checking for Medical Imaging

Keynotes

ICMT - Monday Jul 4, 9:00, EI 9

Approaches to model transformation reuse: From concepts to a-posteriori typing

Juan de Lara, Universidad Autónoma in Madrid, Spain



Models are the main assets of Model-Driven Engineering (MDE), and hence model transformations are essential to automate the model manipulations required by MDE. Different kinds of transformations are common in MDE, like in-place, model-to-model, or model-to-text. In all cases, their definition is based on the meta-models of the models to be manipulated. However, the proliferation of meta-models in MDE (e.g., in connection with Domain-Specific Languages, DSLs) complicates transformation reuse. This is so as transformations are defined for particular meta-models and are not applicable to other meta-models, even if they have some commonalities. Therefore, in order to facilitate the creation of DSL-based MDE solutions, flexible means to reuse transformations across heterogeneous meta-models are required.

In this presentation, we will explore several approaches to transformation reuse. First, taking inspiration from generic programming, we propose concepts, gathering the requirements needed from meta-models to qualify for a model transformation. This way, transformations are defined over concepts and become reusable by binding the concept to concrete meta-models. The binding induces an adaptation of the transformation, which becomes applicable to the bound meta-model. Concepts can also be interpreted as meta-meta-models defining a set of candidate meta-models for the transformation. Hence, we will explore multi-level modelling to express reusable transformations. However, this approach requires using the domain meta-meta-model to construct the meta-models and prevents unanticipated reuse. Hence, the talk will end presenting a-posteriori typing. This is as a means to provide models with additional types beyond their creation meta-model, so that transformations defined for such types become reusable for those models. Moreover, decoupling object creation from typing permits embedding simple transformations in the conformance relation.

Biography

Juan de Lara is associate professor at the computer science department of the Universidad Autónoma in Madrid, where he coordinates the modelling and software engineering research group (miso). He holds a PhD in computer science since 2000, and his current research interests lie in Model-Driven Engineering, in aspects like meta-modelling, multi-level modelling (realized in the MetaDepth tool), domain-specific languages and the analysis of model transformations. He has spent research periods at McGill University (where he developed the AToM3 tool within the MSDL lab), TU Berlin, Sapienza University of Rome and the University of York. He has been PC co-chair for ICMT'12 and FASE'12 and he is in the editorial board of the SoSyM journal.

ICGT - Tuesday Jul 5, 9:00, EI 7

Complexity is the Only Constant: Thoughts on Trends in Computing and Their Relevance to MDE

Juergen Dingel, Queen's University, Ontario, Canada

The talk will discuss the central role that the fight against complexity has played in the relatively short but eventful history of computing and is likely to continue to play. The importance of key MDE concepts — abstraction, automation, and analysis — in this fight will be highlighted. Also, some research efforts and technology trends in computing and society will be discussed and their potential relevance to modeling will be argued. For instance, work in the programming languages community on synthesis and trends in science and society towards increased “openness” and transparency will be of particular interest. Potential research opportunities for different research communities, such as graph transformation and formal methods, will be highlighted.



Biography

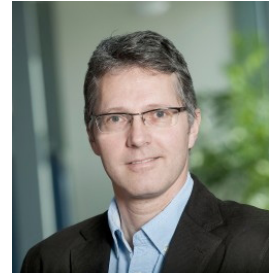
Juergen Dingel is Associate Professor in the School of Computing at Queen's University in Kingston, Canada. He received an M.Sc. in Computer Science from Berlin University of Technology in 1992, an M.Sc. in Pure and Applied Logic in 1994 and a Ph.D. in Computer Science in 1999 from Carnegie Mellon University. He is vice chair of the MODELS Steering Committee, and a member of the editorial board of the Springer journal Software and Systems Modeling (SoSyM). He was PC Co-chair of the ACM/IEEE 17th International Conference on Model Driven Engineering Languages and Systems (MODELS'14) in Valencia and of the IFIP International Conference on Formal Techniques for Distributed Systems (FMOODS-FORTE'11) in Reykjavik. At Queen's, he leads the Modeling and Analysis in Software Engineering Group (MASE). His research interests revolve around the definition and use of rigorous notations and techniques for the development and analysis of software artifacts and he has published extensively on these topics. He has collaborated with a range of industrial partners including IBM, GM, and Ericsson.

Keynotes

TAP - Tuesday Jul 5, 14:00, EI 7

From Testing and Verification to Performance Analysis and Synthesis of Cyber-Physical Systems

Kim G. Larsen, Aalborg University, Denmark



Timed automata and games, priced timed automata and energy automata have emerged as useful formalisms for modeling real-time and energy-aware systems as found in several embedded and cyber-physical systems. In this talk we will survey how the various component of the UPPAAL tool-suite over a 20 year period has been developed to support various type of analysis of these formalisms. This includes the classical usage of UPPAAL as an efficient model checker of hard real time constraints of timed automata models, but also the branch UPPAAL TRON which have been extensively used to perform on- and off-line conformance testing of real-time systems with respect to timed automata specifications. More ambitiously, UPPAAL TIGA allows for automatic synthesis of strategies – and subsequent executable control programs – for safety and reachability objectives. Most recently the branch UPPAAL SMC offers a highly scalable statistical model checking engine supporting performance analysis of stochastic hybrid automata, and the branch UPPAAL STRATEGO supports synthesis (using machine learning) and evaluation of near-optimal strategies for stochastic priced timed games. The keynote will review the various branches of UPPAAL and indicate their concerted applications to a range of real-time and cyber-physical examples.

Biography

Kim G. Larsen is a professor in the Department of Computer Science at Aalborg University within the Distributed and Embedded Systems Unit and director of the ICT-competence center CISS, Center for Embedded Software Systems. In 2015, he won an ERC Advanced Grant with the project LASSO for learning, analysis, synthesis and optimization of cyber physical systems. He is also director of the Sino-Danish Basic Research Center IDEA4CPS, the Danish Innovation Network InfinIT, as well as the newly founded innovation research center DiCyPS: Data Intensive Cyber Physical Systems. Kim G Larsen is prime investigator of the tool UPPAAL and co-founder of the company UP4ALL International. In 2013 he was the recipient of the CAV Award for his work on UPPAAL as “the foremost model checker for real-time systems”. Kim G Larsen became Honorary Doctor (Honoris causa) at Uppsala University, Sweden, in 1999. In 2007 he became Knight of the Order of the Dannebrog. In 2007 he became Honorary Doctor (Honoris causa) at ENS Cachan, France. In 2012 he became Honary Member of Academia Europaea. Since 2016 he has been appointed INRIA International Chair for a 5 year period.

SEFM 1 - Wednesday Jul 6, 9:00, EI 7

Abstractions, Semantic Models and Analysis Tools for Concurrent Systems: Progress and Open Problems

Gul Agha, University of Illinois at Urbana-Champaign, USA



The growth of mobile and cloud computing, cyberphysical systems and the internet of things has arguably made scalable concurrency the dominant form of computing. I will describe the state of the art in models of concurrency, programming abstractions and analysis tools. I will then summarize how actor languages and frameworks have been widely adopted to address scalability, and how new tools that combine static and dynamic analysis are making software safer. However, as we scale up cyberphysical applications and build the internet of things, a key limitation of current languages and tools becomes apparent: the difficulty of representing quantitative and probabilistic properties and reasoning about them. While considerable research has been done in this area, many open problems remain. I will conclude by prioritizing problems that need to be addressed before we can build more complex scalable concurrent applications.

Biography

Gul Agha is Professor of Computer Science at the University of Illinois at Urbana-Champaign. Agha is a Fellow of the IEEE and a recipient of the IEEE Computer Society Meritorious Service Award. He served as Editor-in-Chief of IEEE Concurrency: Parallel, Distributed and Mobile Computing (1994-98), and of ACM Computing Surveys (2000-2007). While Agha is best known for his work on the formalization of the Actor Model and the development of actor languages, he has also led his research group in pioneering research on statistical model checking, concolic testing, computational learning for verification, and in developing a computational model for energy complexity of parallel algorithms. Agha is the co-director of the interdisciplinary Illinois Structural Health Monitoring Project which has developed sensor networks to monitor civil infrastructure, and a co-founder of Embedor Technologies which is using actor inspired distributed computing to enable continuous monitoring of bridges for improved maintenance and anomaly detection.

Keynotes

SEFM 2 - Wednesday Jul 6, 14:00, EI 7

Satisfiability Checking: Theory and Applications

Erika Ábrahám, RWTH Aachen University, Germany

Satisfiability checking aims to develop algorithms and tools for checking the satisfiability of existentially quantified logical formulas. For propositional logic, in the late '90s impressive progress was made towards practically applicable solutions, resulting in powerful SAT solvers. Driven by this success, a new line of research started to enrich propositional SAT solving with solver modules for different theories. Nowadays, sophisticated SAT-modulo-theories (SMT) solvers are available for, e.g., equality logic with uninterpreted functions, bit-vector arithmetic, array theory, floating point arithmetic, and real and integer arithmetic. SAT and SMT solvers are now at the heart of many techniques for the analysis of programs and probabilistic, timed, hybrid and cyber-physical systems, for test-case generation, for solving large combinatorial problems and complex scheduling tasks, for product design optimisation, planning and controller synthesis, just to mention a few well-known areas.



In this talk we give an introduction to the theoretical foundations of satisfiability checking and discuss the efficient embedding of SAT and SMT solvers in different software technologies.

Biography

Erika Ábrahám graduated at the Christian-Albrechts-University Kiel (Germany), and received her PhD from the University of Leiden (The Netherlands) for her work on the development and application of deductive proof systems for concurrent programs. Then she moved to the Albert-Ludwigs-University Freiburg (Germany), where she started to work on the development and application of SAT and SMT solvers. Currently she is professor at RWTH Aachen University (Germany), with main research focus on SMT solving for real and integer arithmetic, and formal methods for probabilistic and hybrid systems.

A Model-Based Driver's License for Self-Driving Cars: Challenges and Future Directions

Krzysztof Czarnecki, University of Waterloo, Canada



Vehicles with limited self-driving capabilities are already on the market and some car makers have promised products capable of autonomous driving in an urban setting in 2020. Self-driving cars will eventually completely transform the automotive industry, replacing private car ownership by service-based products such as robotic cabs. The deployment of large-scale self-driving vehicle fleets will reduce the number of crashes and crash severity, reduce emissions, allow commuters to use their time more effectively, and free up spaces occupied by parked cars. The engineering of self-driving cars requires sophisticated models of the environment and the electronic driver system in order to develop the necessary perception and motion planning and control functions. While current self-driving technologies have improved immensely in recent years, a major challenge is assuring the safe operation of an autonomous vehicle in all traffic situations and all road conditions. I will present a reference architecture for self-driving cars and use it to describe the types of models used in engineering of such systems. I will then focus on the challenges of assuring model-based engineering of self-driving cars. I will close by outlining promising directions to address these challenges.

Biography

Krzysztof Czarnecki is a Professor of Electrical and Computer Engineering at the University of Waterloo. Before coming to Waterloo, he was a researcher at DaimlerChrysler Research (1995-2002), Germany, focusing on improving software development practices and technologies in enterprise, automotive, and aerospace domains. He co-authored the book on Generative Programming (Addison- Wesley, 2000), which deals with automating software component assembly based on domain-specific languages. While at Waterloo, he held the NSERC/Bank of Nova Scotia Industrial Research Chair in Requirements Engineering of Service-oriented Software Systems (2008-2013) and has worked on a range of topics in model-driven systems and software engineering, including product line engineering, design exploration and synthesis, variability modeling, model transformation, and domain-specific languages. He has also helped automotive and aerospace companies introduce effective product-line engineering practices. He received the Premier's Research Excellence Award in 2004 and the British Computing Society in Upper Canada Award for Outstanding Contributions to IT Industry in 2008. He currently leads the NSERC CREATE in Product Line Engineering for Cyber-physical Systems, a \$2.7 million industry-oriented graduate research and training program at the University of Waterloo, and WatAuto, Canada's first self-driving vehicle research project.

Industrial Keynotes

TAP - Thursday Jul 7, 14:00, EI 7

Using Formal Methods for Verification and Validation in Railway

Klaus Reichl, Thales Austria



A very promising and efficient method of showing the correctness of a complex system is using formal methods on a model of that system. To this end there exist plentiful methods and tools for easing the mathematically burdensome process of refinement and proofs as well as the computationally complex task of model checking. While in today's industrial applications formal methods are mostly used for verification (i.e. for showing that the system model fulfills properties such as completeness and consistency) we propose to use these methods for validation as well (i.e. correspondence of the model with the customer needs).

In this paper we show the applicability as well as the limitations of this approach for feature driven development towards continuous verification and validation. As an example we present a model of a railway interlocking system written in Event-B. The model can be instantiated and animated which, in combination with model checking and formal proofs, demonstrates the usefulness of the approach. The resulting model can be used again to automatically generate test cases which are suitable to show the correspondence of the implementation and the model, given that the model supports a sufficient level of detail.

Biography

Klaus Reichl is a Senior System and Software Architect at Thales Ground Transport Division in charge of engineering highest quality solutions in the safety critical area of railway applications. He received his master degree from Vienna University of Technology in 1986. After the development of fault tolerant, real-time computation and communication platforms in the late 1990s, he has been entering the core business development of train signalling and is currently engaged in architecting and modeling signalling applications. In his spare time, he loves playing guitar, indoor and outdoor, and is hiking and skiing the mountains, mostly outdoor. Klaus can be found on LinkedIn and Google+.

Usage of domain specific modeling languages in the automotive industry

Stefan Voget, Continental Automotive GmbH, Germany

Before the introduction of model based engineering, the answer for the language question within the automotive industry was simple: use C. The idea of model based engineering is to shift the complexity out of a textual representation of the code (the source code in C) to a model. Here, the question about language comes up again. This time, it revolves around the decision which language to use to represent the model. Today, the answer is not that simple anymore. Within the automotive industry nearly each project uses its own representation. Often the representation is determined by the architectural tool used in the project. To become independent from these “tool languages”, more and more domain specific modeling languages come up, most of which end up as project specific modeling languages, i.e. specific languages used only in a very dedicated context. In the keynote I will present a motivation for the definition and usage of domain specific modeling languages by using two examples. The first example integrates the development lifecycle of a SW developer with the one of a responsible for functional safety. The second example describes a unified approach for the configuration of different software platforms. Both examples and their motivations are quite different from each other, but show the needs for comprehensive common languages and the importance of model to model transformations to interact between them.

Biography

Stefan Voget is head of HW/SW Innovations in the central strategy and technology department of Continental Automotive in Regensburg, Germany. Mr. Voget got his doctoral thesis in informatics and mathematics in 1996. From 1997 to 2005 he worked on SW-architecture projects for Robert Bosch GmbH. He changed 2005 to Siemens VDO Automotive in Regensburg. He represented the company as project leader in the AUTOSAR consortium worked for several years as product manager for AUTOSAR products. In 2011 he changed to the innovation department in Continental Automotive and led an international funded project “SAFE” about process interpretation of ISO26262. Since 2014 he works for innovation topics for the automated driving area.

Main Events

12th European Conference on Modelling Foundations and Applications (ECMFA)

The European Conference on Modelling Foundations and Applications (ECMFA) is a premier conference dedicated to advancing the state of knowledge in the area of Model-Driven Engineering (MDE) - a paradigm based on the use of models for the specification, design, analysis, synthesis, deployment, testing, and maintenance of complex systems. MDE relies on exploiting models and automation to achieve significant boosts in development productivity and quality. In the past 10 years, ECMFA has provided a venue for interaction among researchers and practitioners interested in MDE. The conference engages the key figures from industry and academia in a dialog which results in stronger and more effective practical application of MDE, hence producing more robust software based on state-of-the-art research results.

Research results presented covered a wide spectrum of MDE topics, including model provenance, model transformations and code generation, model synthesis, model-driven testing, formal modeling approaches, business process modeling, usability of models and more.

This year's edition of ECMFA will feature, besides a full program of peer-reviewed papers, a keynote from Krzysztof Czarnecki entitled "A Model-Based Driver's License for Self-Driving Cars: Challenges and Future Directions" and a keynote from Stefan Voget, joining from Continental Automotive, entitled "Usage of domain specific modeling languages in the automotive industry".

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9th International Conference on Graph Transformation (ICGT)

Graph structures are used almost everywhere when representing or modeling data and systems, not only in applied and theoretical computer science, but also in, e.g., natural and engineering sciences. Graph transformation and graph grammars are the fundamental modeling paradigms for describing, formalizing, and analyzing graphs that change over time when modeling, e.g., dynamic data structures, systems, or models. ICGT 2016 is the Ninth International Conference on Graph Transformation held on July 5-6, 2016 in Vienna. It continues the series of conferences previously held in Barcelona (Spain) in 2002, Rome (Italy) in 2004, Natal (Brazil) in 2006, Leicester (UK) in 2008, Enschede (The Netherlands) in 2010, Bremen (Germany) in 2012, York (UK) in 2014, and L'Aquila (Italy) in 2015 following a series of six International Workshops on Graph Grammars and Their Application to Computer Science from 1978 to 1998 in Europe and in the USA. This year's edition of ICGT will feature, besides a full program of peer-reviewed papers, a keynote from Jürgen Dingel entitled "Complexity is the Only Constant: Thoughts on Trends in Computing and Their Relevance to MDE".

After the opening, there will be a remembrance address in honor of Hartmut Ehrig, one of the fathers of the Graph Transformation community and co-founder of this conference series, who has passed away during the preparation of this conference.

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Main Events

9th International Conference on Model Transformation (ICMT)

Model transformation encompasses a variety of technical spaces, including modelware, grammarware, dataware, and ontoware, a variety of model representations, e.g., based on different types of graphs, and a variety of transformation paradigms including rule-based transformations, term rewriting, and manipulations of objects in general-purpose programming languages, to mention just a few.

The study of model transformation includes foundations, structuring mechanisms, and properties, such as modularity, composability, and parameterization of transformations, transformation languages, techniques, and tools. To achieve impact on software engineering in general, methodologies and tools are required to integrate model transformation into existing development environments and processes.

ICMT is the premier forum for researchers and practitioners from all areas of model transformation. This year's edition will feature, besides a full program of peer-reviewed papers, a keynote from Juan de Lara, entitled "Model Typing Transformations".

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14th International Conference on Software Engineering and Formal Methods (SEFM)

SEFM 2016 is co-located with Software Technologies: Applications and Foundations, STAF 2016, and presents an interdisciplinary forum for the presentation of new advances and research results in the fields of Software Engineering and Formal Methods. The conference aims to bring together leading researchers and practitioners from academia, industry and government, to advance the state of the art in formal methods, to facilitate their uptake in the software industry, and to encourage their integration within practical software engineering methods and tools.

This year's edition will feature a full program of peer-reviewed papers, a keynote from Erika Ábrahám entitled "Satisfiability Checking: Theory and Applications", as well as a keynote from Gul Agha entitled "Abstractions, Semantic Models and Analysis Tools for Concurrent Systems: Progress and Open Problems".

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Main Events

10th International Conference on Tests and Proofs (TAP)

The TAP conference promotes research in verification and formal methods that targets the interplay of proofs and testing: the advancement of techniques of each kind and their combination, with the ultimate goal of improving software and system dependability. The TAP conference aims to promote research in the intersection of testing and proving by bringing together researchers and practitioners from both areas of verification.

The program of TAP 2016 features 11 original papers, as well as a keynote by Kim G. Larsen (Aalborg University, Denmark) titled “From Testing and Verification to Performance Analysis and Synthesis of Cyber-Physical Systems” and an industrial keynote by Klaus Reichl (Thales, Austria) titled “Using formal methods for verification and validation in railway”.

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9th Transformation Tool Contest (TTC)

The 2016 Transformation Tool Contest (TTC) will compare the expressiveness, the usability and the performance of model transformation tools on a case study. A deeper understanding of the relative merits of different tool features will help to further improve transformation tools and to indicate open problems. The contest encompasses the presentation and scoring of the solutions to the offline case on “Class Responsibility Assignment”, as well as the scoring of the live contest (a transformation problem that will be announced on Monday 4th of July). The solutions will be presented and scored at the contest, and the overall winners in each category will be determined.

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Satellite Events - Workshops

BigMDE: Scalable Model Driven Engineering

As Model Driven Engineering (MDE) is increasingly applied to larger and more complex systems, the current generation of modelling and model management technologies are being pushed to their limits in terms of capacity and efficiency. As such, additional research and development is imperative in order to enable MDE to remain relevant with industrial practice and to continue delivering its widely-recognised productivity, quality, and maintainability benefits. The aim of this workshop is to provide a venue where developers and users of modelling and model management languages and tools can present problems and solutions related to topics such as working with large models, collaborative modelling (version control, collaborative editing), transformation and validation of large models, model fragmentation and modularity mechanisms, efficient model persistence and retrieval, models and model transformations on the cloud, and visualization techniques for large models.

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Massimo Tisi

DataMod: From Data to Models and Back

DataMod 2016 aims at bringing together practitioners and researchers from academia, industry and research institutions interested in the combined application of computational modelling methods with data-driven techniques from the areas of knowledge management, data mining and machine learning. Modelling methodologies of interest include automata, agents, Petri nets, process algebras and rewriting systems. Application domains include social systems, ecology, biology, medicine, smart cities, governance, education, software engineering, and any other field that deals with complex systems and large amounts of data. Papers can present research results in any of the themes of interest for the symposium as well as application experiences, tools and promising preliminary ideas. Papers dealing with synergistic approaches that integrate modelling and knowledge management/discovery or that exploit knowledge management/discovery to develop/synthesise system models are especially welcome.

Organizers

Luca Tesei

Roberto Trasarti

FORECAST: FORmal methods for the quantitative Evaluation of Collective Adaptive Systems

Collective Adaptive Systems (CAS) consist of a large number of spatially distributed heterogeneous entities with decentralised control and varying degrees of complex autonomous behaviour that may be competing for shared resources even when collaborating to reach common goals. It is important to carry out thorough quantitative modelling and analysis and verification of their design to investigate all aspects of their behaviour before they are put into operation. This requires combinations of formal methods and applied mathematics which moreover scale to large-scale CAS. The primary goal of this workshop is to raise awareness in the software engineering and formal methods communities of the particularities of CAS and the design and control problems which they bring.

Organizers

Maurice H. ter Beek

Michele Loreti

GCM: Graph Computation Models

Graphs are common mathematical structures which are visual and intuitive. They constitute a natural and seamless way for system modeling in science, engineering and beyond, including computer science, life sciences, business processes, etc. Graph computation models constitute a class of very high level models where graphs are first-class citizens. They generalize classical computation models based on strings (e.g., Chomsky grammars) or on trees (e.g., term rewrite systems). Their mathematical foundation, in addition to their visual nature, facilitates the specification, validation and analysis of complex systems. A variety of computation models have been developed using graphs and rule-based graph transformation. These models include features of programming languages and systems, paradigms for software development, concurrent calculi, local computations and distributed algorithms, and biological or chemical computations. The aim of GCM 2016 is to bring together researchers interested in all aspects of computation models based on graphs and graph transformation techniques.

Organizer

Barbara König

Satellite Events - Workshops

HOFM: Human-Oriented Formal Methods: From Readability to Automation

While designing and applying formal methods, computer scientists have dominantly focused on two factors, only: firstly, the method must be precise and sound and secondly, it must be mathematically concise and aesthetic. Other important characteristics such as simplicity or learnability are ignored too often. These nonfunctional properties, however, are key attributes of usability and user satisfaction. If usability is compromised, methods are not fit for the purpose of documenting, reproducing and communicating key design and realization decisions, or analysis results. For these reasons, many engineers and practitioners largely reject formal methods and formal specification languages as “too hard to understand and use in practice” while admitting that they are powerful and precise. Practitioners across numerous domains are increasingly interested in formal domain-specific modelling, simulation and validation. While there are many applications of formal methods to analyze human-machine interaction and to construct user interfaces, the field of application of human factors to the analysis and to the optimization of formal methods area is almost unexplored. This workshop aims to bring together researchers, engineers and practitioners from academia and industry to baseline the state of the art in this increasingly important domain.

Organizers

Heinz Schmidt

Maria Spichkova

MELO: Model-Driven Engineering, Logic and Optimization

The widespread application of MDE in all kinds of domains has triggered the need of new techniques to solve optimization, visualization, verification, or configuration problems at the model level. Instead of reinventing the wheel, most of these problems could be solved by re-expressing the modeling problem as a logic programming problem, an optimization or a search problem. For instance, verification (satisfiability) of large static models can be addressed by re-expressing the model as a constraint satisfaction problem to be solved by state-of-the-art constraint solvers. Similarly, logic programming can benefit from the integration of MDE to raise the abstraction level at which the problem is described, improve the separation of concerns by using different model-based views at different levels of detail, achieve tool independence, and increase reusability. As well, optimization techniques can benefit from closer connections to MDE principles, e.g., to help develop generic solutions to optimization problems. The main goal of this workshop is to bring together three different communities: the MDE community, the logic programming community, and the optimization community, to explore how each community can benefit from the techniques of the other.

Organizers

Jordi Cabot

Richard Paige

Alfonso Pierantonio

SEMS: Software Engineering Methods in Spreadsheets

Spreadsheets are heavily used in industry as they are easy to create and evolve through their intuitive visual interface. They are often initially developed as simple tools, but, over time, spreadsheets can become increasingly complex, up to the point they become too complicated to maintain. Indeed, in many ways, spreadsheets are similar to “professional” software: both concern the storage and manipulation of data, and the presentation of results to the user. But unlike in “professional” software, activities like design, implementation, and maintenance in spreadsheets have to be undertaken by end-users, not trained professionals. This makes applying methods and techniques from other software technologies a challenging task. The role of SEMS is to explore the possibilities of adopting successful methods from other software contexts to spreadsheets. Some, like testing and modeling, have been tried before and can be built upon. For methods that have not yet been tried on spreadsheets, SEMS will serve as a platform for early feedback.

Organizers

Jácome Cunha

Daniel Kulesz

Sohon Roy

VeryComp: Formal to Practical Software Verification and Composition

Nowadays, modern applications are increasingly realized as distributed systems composing existing pieces of software that autonomically cooperates to achieve a common goal. As a matter of fact, this calls for new software composition paradigms, and patterns, modeling and verification methods that are practical and usable on one hand and formal on the other. Despite the great interest in practical Software Composition and Formal Verification in their isolation, no common and integrated approaches have been established yet. VeryComp 2016 aims at attracting contributions related to the subject at different levels, from modelling to verification and analysis, from componentization to composition. Foundational contributions, as well as concrete application experiments are sought.

Organizers

Marco Autili
Massimo Tivoli
Luca Ferrucci

Manuel Mazzara
Davide Bresolin
Marcello Bersani

Marisol Garcia-Valls

Satellite Events

Doctoral Symposium

The goal of the Doctoral Symposium is to provide a forum in which PhD students can present their work in progress. The symposium supports students by providing independent and constructive feedback about their already completed and, more importantly, planned research work. The symposium will be accompanied by prominent experts who will actively participate in critical discussions.

Co-Chairs

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Francesco Parisi-Presicce

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Manuel Wimmer
Achim D. Brucker
Dimitris Kolovos

Catherine Dubois
Francesco Parisi Presicce

supported by


Projects Showcase

The Projects Showcase event at STAF 2016 provides an opportunity for researchers and practitioners (from both academia and industry) involved in ongoing or completed research projects related to foundations and applications of software technologies to share results, experiences, ideas, on-going work, and knowledge that can lead to fruitful inter-project collaboration. The Projects Showcase welcomes contributions disseminating the objectives and results of national and international research projects, including outcomes of specific deliverables, advances beyond the state of the art, overall innovation potential, exploitation approach and (expected) impact, marketing value, barriers and obstacles.

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Goetz Botterweck
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Istvan Rath
Giuliano Casale

Antonio Garcia-Dominguez
Tom Ritter

Social Events

Welcome Reception

Monday Jul 4, 18:00, KR Kontaktraum

The welcome reception will be held on Monday in the Kontaktraum of TU Wien. This festive room is located on the sixth floor of the conference building and features a nice patio from which you have a breathtaking view of the surrounding area. During the welcome reception, drinks and finger food will be served.



© TU Wien

Banquet

Tuesday Jul 5, 18:30, Weingut am Reisenberg

The banquet takes place at the Weingut am Reisenberg. It is a wonderful location amidst vineyards where Vienna literally lies at your feet. A bus will take all banquet participants to the Weingut am Reisenberg. The bus will depart directly in front of the conference building.



© Weingut am Reisenberg

Mayor's Reception

Wednesday Jul 6, 19:00, City Hall

On Wednesday, the Mayor's Reception will be held at the City Hall (Rathaus), located in the center of Vienna. The City Hall is one of the most beautiful buildings in Vienna and serves as the seat of both the mayor and the city council of the city of Vienna. It was designed by Friedrich von Schmidt and built between 1872 and 1883. The distinctive Gothic style of the City Hall with its magnificent and fabulous halls provides the perfect setting for the conference's reception.



© WienTourismus/Christian Stemper

Cocktail Reception

Thursday Jul 7, 18:00, KR Kontaktraum

The final social event is the cocktail reception on Thursday. The cocktail reception will be held in the same room as the welcome reception on Monday, namely the Kontaktraum. This festive room is located on the sixth floor of the conference building and features a nice patio from which you have a breathtaking view of the surrounding area. Cocktails and finger food will be served.



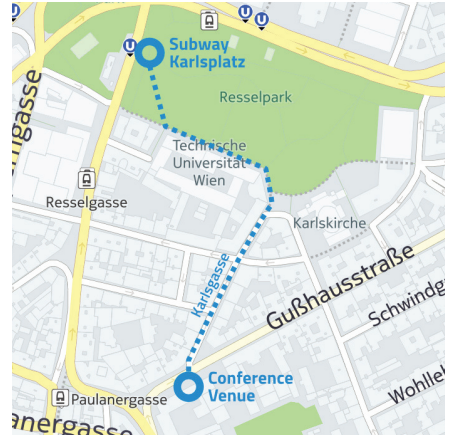
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Venue & Directions

Conference Venue

The conference will be held at the main building of the Electrotechnical Institute of TU Wien. The address of the venue is:

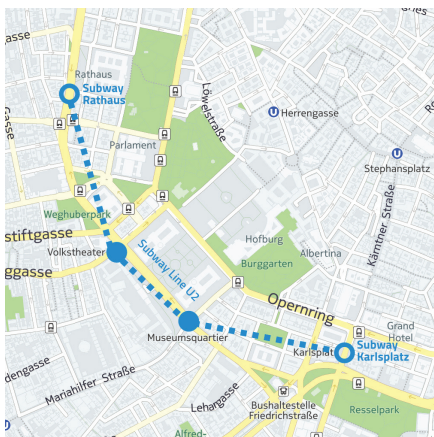
Technische Universität Wien
Elektrotechnisches Institut
Gußhausstraße 29
1040 Vienna, Austria



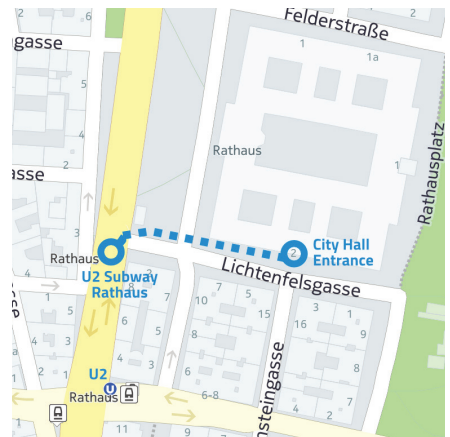
Directions to Conference Venue

Directions to City Hall (Mayor's Reception)

You can reach City Hall (Rathaus), where the Mayor's Reception on Wednesday will be held, by foot (approx. 30 minutes) or by taking the subway U2 from Karlsplatz to Rathaus (direction Stadion, approx. 15 minutes).



Directions to City Hall



Directions from Subway Station
"Rathaus" to City Hall

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TU Wien, Austria

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