

ICFEM 2014

November 3-7, Luxembourg



16th International Conference on Formal Engineering Methods

CONFERENCE PROGRAM



ICFEM Program

Day 1: November 3

08:00 - 08:40 Registration

Conference opening08:40 - 08:50 Conference opening (*Chair: Sjouke Mauw*)08:50 - 09:00 Presentation of Fonds National de la Recherche (*Carlo Duprel*)**Keynote talk (Chair: Sjouke Mauw)**

09:00 - 10:00 Scalable Software Testing and Verification Through Heuristic Search and Optimization
Lionel Briand, University of Luxembourg

Coffee break**Session 1: Formal Specification (Chair: Pierre Kelsen)**

10:30 - 11:00 Comprehension of Spacecraft Telemetry using Hierarchical Specifications of Behavior
Klaus Havelund and Rajeev Joshi

11:00 - 11:30 Extending MSVL with Function Calls
Nan Zhang and Zhenhua Duan

11:30 - 12:00 GRL: a Specification Language for Globally Asynchronous Locally Synchronous Systems
Fatma Jebali, Frederic Lang and Radu Mateescu

Lunch break**Session 2: Theorem Proving (Chair: José Meseguer)**

13:30 - 14:00 Pointer Program Derivation using Coq: Graphs and Schorr-Waite Algorithm
Jean-François Dufourd

14:00 - 14:30 A Formal Framework to Prove the Correctness of Model Driven Engineering Composition Operators
Mounira Kezadri, Marc Pantel, Benoit Combemale and Xavier Thirioux

14:30 - 15:00 On the Formal Analysis of HMM using Theorem Proving
Liya Liu, Osman Hasan and Sofiene Tahar

Coffee break**Session 3: Safety and Security (Chair: Jun Pang)**

15:30 - 16:00 TAuth: Verifying Timed Security Protocols
Li Li, Jun Sun, Yang Liu and Jin Song Dong

16:00 - 16:30 CASSANDRA an Online Failure Prediction Strategy for Dynamically Evolving Systems
Francesco De Angelis, Andrea Polini, Henry Muccini and Maria Rita Di Berardini

ICFEM Program

Day 1: November 3

16:30 - 17:00 Formal Modeling and Analysis of Cassandra in Maude
Si Liu, Muntasir Raihan Rahman, Stephen Skeirik, Indranil Gupta and Jose Meseguer

17:00 - 17:30 Practical Analysis Framework for Software-based Attestation Scheme
Li Li, Hong Hu, Jun Sun, Yang Liu and Jin Song Dong

18:00 - 20:00 Conference reception

ICFEM Program

Day 2: November 4

08:30 - 09:00 Registration

Keynote talk (Chair: Michael Butler)

09:00 - 10:00 SecGuru: Azure Network Verification using Z3
Nikolaj Bjorner, Microsoft Research

Coffee break

Session 4: Program Analysis (Chair: Shengchao Qin)

10:30 - 11:00 A Resource-Based Logic for Termination and Non-Termination Proofs
Ton Chanh Le, Cristian Gherghina, Aquinas Hobor and Wei-Ngan Chin

11:00 - 11:30 A Formula-based Approach for Automatic Fault Localization of Imperative Programs
Si-Mohamed Lamraoui and Shin Nakajima

11:30 - 12:00 Contract-based Verification of MATLAB and Simulink Matrix-manipulating Code
Jonatan Wiik and Pontus Boström

Lunch break

Session 5: Model Checking (Chair: Shin Nakajima)

13:30 - 14:00 An LTL Model Checking Approach for Biological Parameter Inference
Emmanuelle Gallet, Matthieu Manceny, Pascale Le Gall and Paolo Ballarín

14:00 - 14:30 SCC-based Improved Reachability Analysis for Markov Decision Processes
Lin Gui, Jun Sun, Songzheng Song, Yang Liu and Jin Song Dong

14:30 - 15:00 PHASE: A Stochastic Formalism for Phase-Type Distributions
Gabriel Ciobanu and Armand Stefan Rotaru

Coffee break

Session 6: Testing (Chair: Vlad Rusu)

15:30 - 16:00 A Formal Model for Analysing Natural Language Timed Requirements of Reactive Systems
Gustavo Carvalho, Ana Carvalho, Eduardo Rocha, Augusto Sampaio and Ana Cavalcanti

16:00 - 16:30 Complete Model-Based Equivalence Class Testing for the ETCS Ceiling Speed Monitor
Jan Peleska, Anne E. Haxthausen, Cécile Braunstein, Wen-Ling Huang, Uwe Schulze, Linh Vu Hong and Felix Hübner

Coffee break

Panel discussion (Chair: Shaoying Liu)

16:45 - 17:45 Are Formal Engineering Methods and Agile Methods Friend or Enemy?
Panelists: Nikolaj Bjorner, Lionel Briand, Michael Butler, Zhenhua Duan, Shin Nakajima

19:30 - 22:30 Conference dinner

ICFEM Program

Day 3: November 5

08:30 - 09:00 Registration

Keynote talk (Chair: Stephan Merz)

09:00 - 10:00 Approximations for stochastic graph rewriting
Vincent Danos, University of Edinburgh

Coffee break**Session 7: Bisimulation and Program Equivalence (Chair: Jun Sun)**

10:30 - 11:00 Computing Maximal Bisimulations of Labelled Transition Systems
Alexandre Boulgakov, Thomas Gibson-Robinson and A. W. Roscoe

11:00 - 11:30 Modal Characterisations of Probabilistic and Fuzzy Bisimulations
Yuxin Deng and Hengyang Wu

11:30 - 12:00 A Language-Independent Proof System for Mutual Program Equivalence
Stefan Ciobaca, Dorel Lucanu, Vlad Rusu and Grigore Rosu

Lunch break**Session 8: Timed and Hybrid Systems (Chair: Peter Csaba Ölveczky)**

13:30 - 14:00 A Hybrid Model of Connectors in Cyber-Physical Systems
Xiaohong Chen, Jun Sun and Meng Sun

14:00 - 14:30 Formal Throughput and Response Time Analysis of MARTE Models
Gaogao Yan, Xue-Yang Zhu, Rongjie Yan and Guangyuan Li

14:30 - 15:00 Timed Automata Verification via IC3 with Zones
Tobias Isenberg and Heike Wehrheim

Coffee break**Session 9: Model Checking (Chair: Thomas Noll)**

15:30 - 16:00 Bounded Model Checking High Level Petri Nets in PIPE+Verifier
Su Liu, Reng Zeng, Zhuo Sun and Xudong He

16:00 - 16:30 Fast Translation from LTL to Büchi Automata via Non-Transition-based Automata
Shohei Mochizuki, Masaya Shimakawa, Shigeki Hagiwara and Naoki Yonezaki

16:30 - 17:00 GPU Accelerated Dynamic Counterexample Generation in LTL Model Checking
Zhimin Wu, Yang Liu, Yun Liang and Jun Sun

17:00 - 17:30 Improving the Model Checking of Strategies under Partial Observability and Fairness Constraints
Simon Busard, Charles Pecheur, Hongyang Qu and Franco Raimondi

17:30 - 18:30 Farewell reception

09:00 - 09:10 Workshop opening

Opening Address (*Shaoying Liu, Zhenhua Duan*)

09:10 - 10:25 Session 1: Testing and Inspection (*Chair: Cong Tian*)

An Implementation Framework for Optimizing Test Case Generation Using Model Checking

Longhui Chang, Huaikou Miao, and Gongzheng Lu

Applying GA with Tabu list for Automatically Generating Test Cases Based on Formal Specification

Yueqin Zhou, Taku Sugihara, and Yuji Sato

Development of a Software Tool to Support Traceability-Based Inspection of SOFL Specifications

Jinghua Zhang and Shaoying Liu

Coffee break

10:40 - 12:20 Session 2: Model Checking and Animation (*Chair: Shin Nakajima*)

Unified Bounded Model Checking for MSVL

Bin Yu, Zhenhua Duan, and Cong Tian

Probabilistic Model Checking with MSVL

Meng Wang, Zhenhua Duan, and Cong Tian

An Over-Approximation Forward Analysis for Nested Timed Automata

Yunqin Wen, Guoqiang Li, and Shoji Yuen

Adopting Variable Dependency in Animation for Presenting the Behaviour of Process

Mo Li and Shaoying Liu

Lunch break

14:00 - 15:15 Session 3: Education and Verification (*Chair: Huaikou Miao*)

Using Alloy in Introductory Courses of Formal Methods

Shin Nakajima

Automatic Verification for Later-Correspondency of Security Protocols

Xie Xiaofei, Li Xiaohong, Liu Yang, Li Li, Feng Ruitao, and Feng Zhiyong

Combining Separation Logic and Projection Temporal Logic to Reason about Non-Blocking Concurrency

Xiaoxiao Yang

Coffee break

15:40 - 16:55 Session 4: Semantics and Analysis (Chair: Mo Li)

Formal Semantics of Orc Combinators Based on TLA+

Zhen You and Jinyun Xue

Incremental Points-to Analysis for Java via Edit Propagation

Yuting Chen, Qiuwei Shi, and Weikai Miao

A Memory Management Mechanism for MSVL

Kai Yang, Zhenhua Duan, and Cong Tian

16:55 - 17:00 Closing

18:00 - 21:00 Banquet

Workshop opening

09:10 - 09:15 Welcome, opening

Invited talk (Chair: Cyrille Artho)

09:15 - 10:15 Experience with Rule-Based Analysis of Spacecraft Logs
Klaus Havelund, NASA Jet Propulsion Laboratory (JPL)

Coffee break

Session 1: Concurrency in hardware and systems (Chair: Klaus Havelund)

10:40 - 11:05 Parallelism Analysis: Precise WCET Values for Complex Multi-Core Systems
Timon Kelter and Peter Marwedel

11:05 - 11:30 Formal Verification of Distributed Task Migration for Thermal Management in On-chip Multi-core Systems using nuXmv
Syed Ali Asadullah Bukhari, Faq Khalid Lodhi, Osman Hasan, Muhammad Shafique, and Joerg Henkel

11:30 - 11:55 Coalgebraic Semantic Model for the Clock Constraint Specification Language
Frederic Mallet and Grygoriy Zholtkevych

11:55 - 12:20 Modelling Hybrid Systems in Hy-tccp
Damian Adalid, Maria del Mar Gallardo and Laura Titolo

Lunch break

Session 2: Railway systems (Chair: Peter Ölveczky)

14:00 - 14:25 Formal Modeling and Verification of Interlocking Systems Featuring Sequential Release
Linh H. Vu, Anne E. Haxthausen, and Jan Peleska

14:25 - 14:50 Dynamic State Machines for Formalizing Railway Control System Specifications
Ugo Gentile, Roberto Nardone, Adriano Peron, Valeria Vittorini, Stefano Marrone, Renato De Guglielmo, Nicola Mazzocca, and Luigi Velardi

14:50 - 15:15 Modelling and Analysing the European Rail Traffic Management System in Real-Time Maude
Andrew Lawrence, Ulrich Berger, Phillip James, Markus Roggenbach, and Monika Seisenberger

Coffee break

Session 3: Program analysis (*Chair: Thomas Noll*)

15:45 - 16:10 Expression-based aliasing for OO-languages
Georgiana Caltais

16:10 - 16:35 Specifying and Verifying Concurrent C Programs with TLA+
Amira Methni, Matthieu Lemerre, Belgacem Ben Hedia, Serge Haddad, and Kamel Barkaoui

16:35 - 17:00 Analyzing Industrial Architectural Models by Simulation and Model-Checking
Raluca Marinescu, Cristina Seceleanu, Henrik Lonn, Henrik Kaijser, Marius Mikucionis, and Alexandre David

18:00 - 21:00 Banquet

Invited talk (*Chair: Peter Ölveczky*)

- 09:15 - 10:15 Safety, Dependability and Performance Analysis of Aerospace Systems
Thomas Noll, RWTH Aachen University

Coffee break

Session 1: Protocol analysis; refinement checking, automata

- 10:40 - 11:05 Key-Secrecy of PACE with OTS/CafeOBJ
Dominik Klein
- 11:05 - 11:30 A Normalized Form for FIFO Protocols Traces, Application to the Replay of Mode-based Protocols
Mamoun Filali-Amine, Meriem Ouederni, and Jean-Baptiste Raclet
- 11:30 - 11:55 A Formal Model of SysML Blocks using CSP for Assured Systems Engineering
Jaco Jacobs and Andrew Simpson
- 11:55 - 12:20 Checking Integral Real-time Automata for Extended Linear Duration Invariants
Changil Choe and Univan Ahn

Lunch break

Session 2: Automotive systems (*Chair: Cyrille Artho*)

- 14:00 - 14:25 A Spin-based Approach for Checking OSEK/VDX Applications
Haitao Zhang, Toshiaki Aoki, and Yuki Chiba
- 14:25 - 14:50 Checking the Conformance of a Promela Design to Its Formal Specification in Event-B
Vu Huong, Yuki Chiba, Kenro Yatake, and Toshiaki Aoki

14:50 - 15:30 Closing, coffee break

Notes

