Dagstuhl Seminar 17371
Deduction Beyond First-Order Logic

Monday, 11.09.2017

9:00-10:30 **Opening – Introductions**

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

11:00-11:40 **Introductions**

11:40-12:10 Franz Baader, TU Dresden, DE
What QFBAPA can do for Description Logics

12:15-14:00 **Lunch**

14:00-14:30 Renate Schmidt, University of Manchester, GB
Automated Forgetting, Uniform Interpolation and Second-Order Quantifier Elimination

14:30-15:00 Moa Johansson, Chalmers Univ. of Techn. - Göteborg, SE
Automating Proofs by (co)-Induction and Theory Exploration

15:00-15:30 Andrei Popescu, Middlesex University - London, GB
Coinduction and corecursion in Isabelle/HOL

15:30-16:15 **Tea/Coffee + Cake**

16:15-16:45 Sorin Stratulat, University of Lorraine - Metz, FR
Cyclic Proofs with Ordering Constraints

16:45-17:15 Philipp Rümmer, Uppsala University, SE
Synthesising regular sets and relations with a SAT solver

18:00 **Dinner**

Tuesday, 12.09.2017

9:00 - 9:30 Natarajan Shankar, SRI - Menlo Park, US
Code generation from higher-order logic

9:30-10:00 Chad E. Brown, Czech Technical University - Prague, CZ
How higher order is mathematics?

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

10:30-11:00 K. Rustan M. Leino, Microsoft Corporation - Redmond, US
Supernatural computation of fixpoints

11:00-11:30 Cynthia Kop, University of Copenhagen, DK
Higher-order term rewriting

11:30-12:00 Reiner Hähnle, TU Darmstadt, DE
Why user experiments matter for automated reasoning

12:15-14:00 **Lunch**

14:00-14:30 Thomas Ströder, Metro Systems GbmH - Düsseldorf, DE
Symbolic execution and program synthesis

14:30-15:00 James Brotherston, University College London, GB
Biabduction in array separation logic

15:00-15:30 Mihaela Sighireanu, University Paris-Diderot, FR
Compositional entailment checking for theories based on separation logic

15:30-16:15 **Tea/Coffee + Cake**

16:15-16:45 Naoki Nishida, Nagoya University, JP
Difference between program verification via Hoare logic and rewriting induction

16:45-17:15 Chantal Keller, University of Paris Sud - Orsay, FR
Program testing in higher-order logic

17:15-17:45 Cezary Kaliszyk, Universität Innsbruck, AT
What else can automation do for proof assistants?

18:00 **Dinner**

Wednesday, 13.09.2017

9:00 - 9:30 Christoph Benzmüller, FU Berlin, DE
Automating Free Logic in HOL, with an Experimental Application in Category Theory

9:30-10:00 Alexander Steen, FU Berlin, DE
Flexible Theorem Proving in Modal Logics

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

10:30-11:00 Jürgen Giesl, RWTH Aachen, DE
Automated Complexity Analysis for Java Programs

11:00-11:30 Pascal Fontaine, LORIA & INRIA - Nancy, FR
Scalable Fine-Grained Proofs for Formula Processing

11:30-12:00 Christoph Weidenbach, MPI für Informatik - Saarbrücken, DE
The Quality of Models in Automated Reasoning

12:15-14:00 **Lunch**

14:00-20:30 **Excursion to Trier / Dinner in a Restaurant**

14:00-15:00 Bus journey Dagstuhl-Trier
15:00-16:30 Guided tour
16:30-17:30 Sightseeing
17:30-19:30 Dinner at Restaurant "Zum Domstein"
(Hauptmarkt 5, 54290 Trier – Tel. 0651 74490)
19:30-20:30 Bus journey Trier-Dagstuhl

Price: - Bus (~45 seats): 450 EUR
- Guided Tour: 110 EUR
- Dinner

Estimated Price/Person: 27-30 EUR + Dinner

For those who do not take part in the excursion:

15:30-16:15 **Tea/Coffee + Cake**

18:00 **Dinner**

Thursday, 14.09.2017

9:00 - 9:30 Tobias Nipkow, TU München, DE
Root-balanced Trees: Verified Algorithms Analysis

9:30 - 10:00 Thomas Sewell, Data61 - Sydney, AU
Verified Reduction to FOL/SMT: A Wishlist

10:00 - 10:20 Jasmin Christian Blanchette, VU University of Amsterdam, NL
Towards Strong Higher-Order Automation for Fast Interactive Verification

10:20 - 10:40 **Coffee Break**

10:40 - 11:10 Cesare Tinelli, University of Iowa - Iowa City, US
SMT-LIB 3: Bringing higher-order logic to SMT

11:10 - 11:40 Nikolaj S. Bjorner, Microsoft Corporation - Redmond, US
On extending SMT solvers

11:40 - 12:10 Andrew Joseph Reynolds, University of Iowa - Iowa City, US
Fast and Slow Synthesis Procedures in SMT

12:15 - 14:00 **Lunch**

14:00 - 14:30 Deepak Kapur, University of New Mexico - Albuquerque, US
Efficient Interpolant generation algorithms based on Quantifier Elimination: Cases of EUF, Octagons, ...

14:30 - 15:00 Andrei Paskevich, University of Paris Sud - Orsay, FR
Featherweight alias control using types

15:00 - 15:30 Hans de Nivelle, University of Wroclaw, PL
Integrating Logic with Partial Functions into a Proof Checker

15:30 - 16:15 **Tea/Coffee + Cake**

16:15 - 16:45 Tomer Libal, INRIA Saclay - Île-de-France, FR
Constrained Resolution via (Almost) First-order Theorem provers

16:45 - 17:15 Stephan Schulz, Duale Hochschule B-W - Stuttgart, DE
Towards a classification of ATP proof tasks (part II)

17:15 - 17:45 Martin Suda, TU Wien, AT
Recent Improvements of Theory Reasoning in Vampire

18:00 **Dinner**

Friday, 15.09.2017

9:00 - 9:30 Konstantin Korovin, University of Manchester, GB
An Abstraction-Refinement Framework for Reasoning with Large Theories

9:30 - 10:00 Josef Urban, Czech Technical University - Prague, CZ
Beyond Deduction

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

10:30 - 11:00 Ruzica Piskac, Yale University - New Haven, US
Automating Separation Logic Reasoning using SMT Solvers

11:00 - 11:30 Carsten Fuhs, Birkbeck, University of London, GB
Harnessing First Order Termination Provers Using Higher Order Dependency Pairs

11:30 - 12:00 Viorica Sofronie-Stokkermans, Universität Koblenz-Landau, DE
On Symbol Elimination in Theory Extensions

12:15-14:00 **Lunch**