Curriculum Vitae
Stefan Ratschan

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December 13, 2023

1 Personal Information

Full Name:	Stefan Matthias Ratschan
Academic Degrees:	doc. ($\sim$ assoc. prof.), Dr. techn. ($\sim$Ph.D.), Dipl.-Ing. ($\sim$M.Sc.)
Citizenship:	Austrian
Languages:	German (native speaker), English (fluent), Czech (fluent)
	Bosnian/Croatian/Serbian (intermediate), Spanish (passive)

2 Education

Ph.D. Degree in Computer Science with Distinction (September 1998)
Ph.D. Thesis: "Approximate Constraint Logic Programming",
Research Institute for Symbolic Computation (RISC-Linz),
Johannes Kepler University, Linz, Austria.

Diploma Degree in Computer Science (February 1995)
Diploma Thesis: "RISC-CLP(Δ): A Constraint Logic Programming System with Parametric Domain",
Research Institute for Symbolic Computation (RISC-Linz),
Johannes Kepler University, Linz, Austria.

High School Exam (Matura) with Distinction (June 1989)
Bundesgymnasium Schärding, Austria

3 Employment History

Researcher (July 2006–) and **Department Head** (2013–)
Institute of Computer Science of the Academy of Sciences of the Czech Republic
Prague, Czech Republic

Staff Researcher and Principal Investigator in Transregional Research Center AVACS (November 2004–June 2006)
Max-Planck-Institut für Informatik
Saarbrücken, Germany

Postdoctoral Research Fellow (November 2002–October 2004)
Max-Planck-Institut für Informatik
Saarbrücken, Germany

Marie Curie Postdoctoral Fellow (November 2001–October 2002)
European Union Grant
"Quantified Constraint Solving in Control Engineering"
Universitat de Girona, Spain

PostDoc (November 1999–September 2001)
"Numerical and Symbolic Scientific Computing"
Research Institute for Symbolic Computation (RISC-Linz),
Johannes Kepler University, Linz, Austria.

Social Service ("Zivildienst") (August 1998–September 1999)
Humanitarian Worker,
World University Service Austria and University of Sarajevo,
Bosnia and Herzegovina.

Research Assistant (September 1994–June 1998)
Research Institute for Symbolic Computation (RISC-Linz),
Johannes Kepler University, Linz, Austria.

Programmer
Development of various types of business software

4 Fundraising and Awards

- Czech Science Foundation Grant GAČR 21-09458S, "Quasi-Decision Procedures for First-Order Theories of Real Functions", 900 Kč/year, 2021–2023
- Czech Science Foundation Grant GAČR 15-14484S, "Simulation-Based Computation of Robust Invariants of Hybrid Dynamical Systems", 900 Kč/year, 2015–2018
- Czech Science Foundation Grant GAČR P202/12/J060, "Integrated Verification and Falsification of Hybrid Systems of Industrial Size", 900 Kč/year, 2012–2014
- Czech Ministry of Education, Youth, and Sports, Grant MŠMT OC10048, "Efficient Handling of Non-linear Numerical Constraints Arising in Automated Reasoning about Rich Models of Computer Systems", 450K Kč/year, 2010–2012
- Co-proposer and Management Committee member of COST Action IC0901: "Rich-Model Toolkit—An Infrastructure for Reliable Computer Systems", 2009–2013
- "Verification of Hybrid Systems" 750 Kč/year (201/08/J020, Czech Science Foundation), associated project of transregional research center (Interregio-SFB) AVACS (German science Foundation), 2M€/year, 2008–2010
- Individual Marie Curie Postdoctoral Fellowship (European Union), 2001

5 Publications and Talks

- All publications listed below use alphabetic order of authors with the exception of publications marked with †.
- Preprints of most of these publications are available at
  `http://www.cs.cas.cz/~ratschan/preprints.html`

5.1 Edited Collections, Journal Special Issues, and Proceedings

Thao Dang and Stefan Ratschan (editors)
Proceedings 6th International Workshop on Symbolic-Numeric Methods for Reasoning about CPS and IoT
Electronic Proceedings in Theoretical Computer Science, Volume 331, 2021
http://dx.doi.org/10.4204/EPTCS.331

Stefan Ratschan and Thomas Sturm (editors)
Constraint Solving and Complex Systems
journal special issue
Mathematics in Computer Science
Volume 6, Number 4, 2012, p. 345

Georgios Fainekos, Eric Goubault, Sylvie Putot, and Stefan Ratschan (editors)
Numerical Software Verification
journal special issue
Mathematics in Computer Science
Volume 5, Number 4, 2011, pp. 357–358

Stefan Ratschan (editor)
Fourth International Conference on Mathematical Aspects of Computer and Information Sciences—MACIS 2011
Internal Conference Proceedings, 271 pages

5.2 Journal Publications

Stefan Ratschan and Jan Kuřátko
Solving Reachability Problems by a Scalable Constrained Optimization Method
Optimization and Engineering
Volume 21, 2020, pp. 215–239

Stefan Ratschan
Converse Theorems for Safety and Barrier Certificates
IEEE Transactions on Automatic Control
Volume 63, Issue 8, 2018, pp. 2628–2632

Peter Franek, Stefan Ratschan, and Piotr Zgliczynski
Quasi-decidability of a Fragment of the First-order Theory of Real Numbers
Journal of Automated Reasoning
Volume 72, 2016, pp. 157-185

Peter Franek and Stefan Ratschan
Effective Topological Degree Computation Based on Interval Arithmetic
Mathematics of Computation
Volume 84, 2015, 1265–1290

Stefan Ratschan and Milan Hladík
Efficient Solution of a Class of Quantified Constraints with Quantifier Prefix Exists-Forall
Mathematics in Computer Science

Volume 8, Issue 3, 2014, 329–340

Stefan Ratschan
Safety Verification of Non-linear Hybrid Systems is Quasi-Decidable
Formal Methods in System Design
Volume 44, Issue 1, 2014, pp. 71-90

Lijun Zhang, Zhikun She, Stefan Ratschan, Holger Hermanns, and Ernst Moritz Hahn
Safety Verification for Probabilistic Hybrid Systems
European Journal of Control
Volume 18, Number 6, 2012, pp. 572–587

Stefan Ratschan and Zhikun She
Providing a Basin of Attraction to a Target Region of Polynomial Systems by Computation of Lyapunov-like Functions
SIAM J. Control and Optimization
Volume 48, Number 7, 2010, pp. 4377–4394

Martin Fränzle, Christian Herde, Tino Teige, Stefan Ratschan, and Tobias Schubert
Efficient Solving of Large Non-linear Arithmetic Constraint Systems with Complex Boolean Structure
Journal on Satisfiability, Boolean Modeling and Computation
Special Issue on SAT/CP Integration
Volume 1, 2007, pp. 209–236

Werner Damm, Guilherme Pinto, and Stefan Ratschan
Guaranteed Termination in the Verification of LTL Properties of Non-linear Robust Discrete Time Hybrid Systems
International Journal of Foundations of Computer Science (IJFCS)
Volume 18, Number 1, 2007, pp. 63–86

Stefan Ratschan and Zhikun She
Safety Verification of Hybrid Systems by Constraint Propagation Based Abstraction Refinement
ACM Transactions on Embedded Computing Systems
Volume 6, Number 1, 2007, pp. 1–23

Stefan Ratschan
Efficient Solving of Quantified Inequality Constraints over the Real Numbers
ACM Transactions on Computational Logic
Volume 7, Number 4, 2006, pp. 723–748

Luc Jaulin, Stefan Ratschan, and Laurent Hardouin
Set Computation for Nonlinear Control†
Reliable Computing
Volume 10, Number 1, 2004, pp. 1–26

Stefan Ratschan
Search Heuristics for Box Decomposition Methods
Journal of Global Optimization
Volume 24, Number 1, 2002, pp. 51–60

Stefan Ratschan
Quantified Constraints Under Perturbation
Journal of Symbolic Computation
Volume 33, Number 4, 2002, pp. 493–505

Stefan Ratschan
Approximate Quantified Constraint Solving by Cylindrical Box Decomposition
Reliable Computing
Volume 8, Number 1, 2002, pp. 21–42

Stefan Ratschan
Convergent Approximate Solving of First-order Constraints by Approximate Quantifiers
ACM Transactions on Computational Logic
Volume 5, Number 2, 2004, pp. 264–281

Stefan Ratschan
Uncertainty Propagation in Heterogeneous Algebras for Approximate Quantified Constraint Solving
Journal of Universal Computer Science,
Volume 6, Number 9, 2000.

5.3 Articles in Refereed Conference Proceedings

Stefan Ratschan
Deciding Predicate Logical Theories of Real-Valued Functions
MFCS 2023: 48th International Symposium on Mathematical Foundations of Computer Science
Leibniz International Proceedings in Informatics (LIPIcs) vol. 272

Jiří Fejlek and Stefan Ratschan
LQR-trees with Sampling Based Exploration of the State Space
IROS 2023, IEEE/RSJ International Conference on Intelligent Robots and Systems, 2023

Enrico Lipparini and Stefan Ratschan
Satisfiability of Non-Linear Transcendental Arithmetic as a Certificate Search Problem
NFM 2023: NASA Formal Methods Symposium, Springer LNCS 13903

Tomáš Kolárik and Stefan Ratschan
Railway Scheduling Using Boolean Satisfiability Modulo Simulations
FM 2023: Formal Methods, LNCS 14000

Jiří Fejlek and Stefan Ratschan
Computing Funnels Using Numerical Optimization Based Falsifiers
ICRA 2022: IEEE International Conference on Robotics and Automation (ICRA)

Jan Onderka and Stefan Ratschan
Fast Three-Valued Abstract Bit-Vector Arithmetic
VMCAI 2022: Verification, Model Checking, and Abstract Interpretation
Springer LNCS 13182, 2022

Tomáš Kolárik and Stefan Ratschan
SAT Modulo Differential Equation Simulations

14th International Conference on Tests and Proofs
Springer LNCS 12165, 2020

Stefan Ratschan
Simulation Based Computation of Certificates for Safety of Dynamical Systems
FORMATS 2017: Formal Modelling and Analysis of Timed Systems
Springer LNCS 10419, pp. 303–317, 2017

Jan Kuřátko and Stefan Ratschan
Combined Global and Local Search for the Falsification of Hybrid Systems
FORMATS 2014: Formal Modelling and Analysis of Timed Systems
Springer LNCS 8711, pp. 146–160, 2014

Stefan Ratschan
An Algorithm for Formal Safety Verification of Complex Heterogeneous Systems
REC 2012: 5th International Conference on Reliable Engineering Computing
M. Vořechovský, V. Sadílek, S. Seitl, V. Veselý, R. L. Muhanna, and R. L. Musslen (eds),
pp. 457–467
`http://rec2012.fce.vutbr.cz/documents/proceedings/REC2012_proceedings.pdf`

Tomáš Dzetkulič and Stefan Ratschan
Incremental Computation of Succinct Abstractions For Hybrid Systems
FORMATS 2011: Formal Modeling and Analysis of Timed Systems
U. Fahrenberg and S. Tripakis (Eds.): FORMATS 2011, LNCS 6919, pp. 271–285. Springer, Heidelberg (2011)

Peter Franek and Stefan Ratschan and Piotr Zgliczynski
Satisfiability of Systems of Equations of Real Analytic Functions is Quasi-decidable
MFCS 2011: 36th International Symposium on Mathematical Foundations of Computer Science
Springer LNCS 6907

Stefan Ratschan
Safety Verification of Non-linear Hybrid Systems is Quasi-Semidecidable
TAMC 2010: 7th Annual Conference on Theory and Applications of Models of Computation
Springer LNCS 6108, pp. 397–408, 2010

Lijun Zhang, Zhikun She, Stefan Ratschan, Holger Hermanns and Ernst Moritz Hahn
Safety Verification for Probabilistic Hybrid Systems
CAV 2010: 22nd International Conference on Computer Aided Verification
Springer LNCS 6174, pp. 196–211, 2010

Tomáš Dzetkulič and Stefan Ratschan
How to Capture Hybrid Systems Evolution Into Slices of Parallel Hyperplanes
ADHS'09: 3rd IFAC Conference on Analysis and Design of Hybrid Systems, 2009
pages 274–279

Stefan Ratschan and Jan-Georg Smaus
Finding Errors of Hybrid Systems by Optimising an Abstraction-Based Quality Estimate
TAP'09: Tests and Proofs, Springer LNCS 5668, pp. 153–168, 2009

Stefan Ratschan and Zhikun She
Recursive and Backward Reasoning in the Verification of Hybrid Systems
Proceedings of the 5th Int. Conf. on Informatics in Control, Automation and Robotics (ICINCO'2008)
INSTICC Press, http://dx.doi.org/10.5220/0001475500650071

Henning Burchardt and Stefan Ratschan
Estimating the Region of Attraction of Ordinary Differential Equations by Quantified Constraint Solving
Proceedings of the 3rd WSEAS International Conference on DYNAMICAL SYSTEMS and CONTROL (CONTROL'07),
WSEAS Press, 2007, 241–246

Felix Klaedtke, Stefan Ratschan and Zhikun She
Language-Based Abstraction for Hybrid System Verification
Verification, Model Checking and Abstract Interpretation
Springer LNCS 4349, 2007, 151–166

Stefan Ratschan and Zhikun She
Providing a Basin of Attraction to a Target Region by Computation of Lyapunov-like Functions
Proceedings of IEEE International Conference on Computational Cybernetics
2006

Stefan Ratschan and Zhikun She
Constraints for Continuous Reachability in the Verification of Hybrid Systems
Proceedings of the 8th International Conference on Artificial Intelligence and Symbolic Computation
Springer LNCS 4120, 2006, 196–210

Stefan Ratschan and Jan-Georg Smaus
Verification-Integrated Falsification of Non-Deterministic Hybrid Systems
Proceedings of the 2nd IFAC Conference on Analysis and Design of Hybrid Systems
2006

Werner Damm, Guilherme Pinto and Stefan Ratschan
Guaranteed Termination in the Verification of LTL Properties of Non-linear Robust Discrete Time Hybrid Systems
Proceedings of the Third International Symposium on Automated Technology for Verification and Analysis, 2005
Springer LNCS 3707, 2005, 99–113

Stefan Ratschan and Zhikun She
Safety Verification of Hybrid Systems by Constraint Propagation Based Abstraction Refinement
Proceedings of the Eighth International Workshop on Hybrid Systems: Computation and Control
Springer LNCS 3414, 2005, 573–589

Stefan Ratschan
Solving Existentially Quantified Constraints with One Equality and Arbitrarily Many Inequalities
Proceedings of the Ninth International Conference on Principles and Practice of Constraint Programming,

Springer LNCS 2833, 2003, 615–633

Stefan Ratschan and Josep Vehí
Robust Pole Clustering of Parametric Uncertain Systems Using Interval Methods†
Robust Control Design 2003 — Proceedings of the 4th IFAC Symposium
Patrizio Colaneri (ed.)
Elsevier Science
2004
Stefan Ratschan
Continuous First-Order Constraint Satisfaction with Equality and Disequality Constraints
Proceedings of the Eighth International Conference on Principles and Practice of Constraint Programming,
Springer LNCS 2470, 2002, 680–685

Stefan Ratschan
Continuous First-Order Constraint Satisfaction
Artificial Intelligence, Automated Reasoning, and Symbolic Computation 2002, Springer LNCS 2385, 2002, 181–195

Stefan Ratschan and Luc Jaulin
Solving Composed First-Order Constraints From Discrete-Time Robust Control†
Proc. of the Sixth Annual Workshop of the ERCIM Working Group on Constraints
http://arXiv.org/html/cs/0110012
2001

5.4 Invited Contributions and Editorials

Stefan Ratschan
Decidability from a Numerical Point of View
Invited Talk Abstract
Mathematical Aspects of Computer and Information Sciences, Springer LNCS 9582

Stefan Ratschan and Thomas Sturm
Constraint Solving and Complex Systems—Special Issue Foreword
Mathematics in Computer Science
Volume 6, Number 4, 2012, p. 345

Georgios Fainekos, Eric Goubault, Sylvie Putot, and Stefan Ratschan
Numerical Software Verification—Special Issue Foreword
Mathematics in Computer Science
Volume 5, Number 4, 2011, pp. 357–358

Stefan Ratschan
Symbolic-numeric Problems in the Automatic Analysis and Verification of Cyber-physical Systems
SNC '09: Proceedings of the 2009 Conference on Symbolic Numeric Computation
ACM, 2009, pp. 7–8

Stefan Ratschan
Verification of Hybrid Systems

Newsletter of the European Consortium for Mathematics in Industry, 2006, special issue on result-verifying computations, Andreas Frommer and Bruno Lang (eds.), volume 39, pp. 13–14

Hirokazu Anai and Stefan Ratschan
Computer Algebra and Control System Design
Proc. of the Seventh Asian Symposium on Computer Mathematics (ASCM 2005), pp. 54–57
Sung-il Pae and Hyungju Park (eds.)
Korea Institute for Advanced Study

5.5 Articles in Published Workshop Proceedings

Stefan Ratschan
Computing ODE-barriers in hyper-rectangles
2016 Int. Workshop on Symbolic and Numerical Methods for Reachability Analysis (SNR), pp. 1-6
doi: 10.1109/SNR.2016.7479380

Stefan Ratschan
Solving Undecidable Problems in the Theory of Real Numbers and Hybrid Systems
Algorithmic Algebra and Logic 2005
Proceedings of the Conference in Honor of the 60th Birthday of Volker Weispfenning
A. Dolzmann, A. Seidl, and T. Sturm (eds.)
Books on Demand GmbH, Norderstedt

Stefan Ratschan and Zhikun She
Constraint Based Verification of Hybrid Systems
Proc. of the Seventh Asian Symposium on Computer Mathematics (ASCM 2005), pp. 66–68
Sung-il Pae and Hyungju Park (eds.)
Korea Institute for Advanced Study

5.6 Software

Stefan Ratschan and Zhikun She
HSOLVER
Verification of hybrid systems
`http://hsolver.sourceforge.net`
approximately 430 downloads April 2005-March 2011

Stefan Ratschan
RSOLVER
Solver for quantified real-number constraints
`http://rsolver.sourceforge.net`
approximately 2400 downloads April 2005-November March 2011

Stefan Ratschan with Hoon Hong, Andreas Neubacher, Volker Stahl et. al.
Approximate Quantified Constraint Solving

5.7 Invited Talks and Tutorials

Invited Keynote
Non-Linear Real Arithmetic with Transcendental Function Symbols: Undecidable but Easy?
7th International Workshop on Satisfiability Checking and Symbolic Computation
Haifa, Israel
Part of IJCAR 22, at FLOC 2022

Invited Plenary Talk
Verification Methods: Rigorous Results using Non-rigorous Computation
High Performance Computing in Science and Engineering (HPCSE), Beskydy, Czech Republic, 2017

Invited Plenary Talk
Decidability from a Numerical Point of View
Sixth International Conference on Mathematical Aspects of Computer and Information Sciences (MACIS), Berlin, 2015

Panel Session Speaker
The Role of Robustness in Hybrid Systems
17th International Conference on Hybrid Systems: Computation and Control (HSCC), Berlin, 2014

Invited visiting researcher, 2 weeks, Beihang University, China, 2010

Non-linear Numerical Constraint Solving
Automatic Verification and Analysis of Complex Systems
1st AVACS Spring School, Universität Oldenburg, March 2010

Symbolic-Numeric Problems in the Automatic Analysis and Verification of Cyber-Physical Systems
Invited Plenary Talk
SNC2009, 3rd International Workshop on Symbolic-Numeric Computation
Kyoto, Japan, 2009

Interval Computation: Why? When? How?
Tutorial (2x90min)
Seminar on numerical analysis and winter school (seminář numerické analýzy a zimní škola), SNA'09, Ostrava, 2009

Guaranteed Termination in the Verification of Non-Linear Robust Hybrid Systems
German Verification Day, Oldenburg, 2005

Quantified Constraints Under Perturbation
Invitational Special Session, Seventh International Conference on Applications of Computer Algebra, Albuquerque, 2001

Various workshop invitations (e.g., "Prague gathering of logicians 2014", numerous Dagstuhl seminars; NII Shonan Meeting; ESI Vienna: "Global Optimization"; ZiF Bielefeld "Mathematical Stability Analysis in Biomechanics and Robotics",), and invitations to seminar talks (e.g., EPFL Switzerland)

5.8 Numerous Talks in Workshops

5.9 Other Publications

Stefan Ratschan
Applications of Quantified Constraint Solving
http://arxiv.org/abs/1205.5571

Interview Stefan Ratschan
In "Vědci a vědkyně v pohhybu—o akademické mobilitě" (Marta Vohlídalová a Alice Červinková), Sociologický ústav AV ČR, 2012, pp. 116–124

6 Editing, Conference, and other Organizational Activities

- Vice president of supervisory board, Institute Computer Science, Academy of Sciences of the Czech Republic, 2012–2013
- Steering committee chair of conference series "Mathematical Aspects of Computer and Information Sciences" (MACIS), 2012–2013
- Editorial board member of journal "Mathematics in Computer Science" (Birkhäuser Verlag), 2010–2021
- Member of Subject-area Board Informatics, Faculty of Mathematics and Physics, Charles University in Prague, 2015–
- Member of Board of the doctoral study program Informatics, Faculty of Information Technology, Czech Technical University in Prague, 2015–
- Member of Board of the doctoral study program Control Engineering and Robotics, Faculty of Electrical Engineering, Czech Technical University in Prague, 2017–
- ICTAC 2023: 20th International Colloquium on Theoretical Aspects of Computing, PC member
- SNR 2021: 7th International Workshop on Symbolic-Numeric Methods for Reasoning about CPS and IoT (SNR), program co-chair
- SC^2 2020: Fifth International Workshop on Satisfiability Checking and Symbolic Computation, PC member.
- SNR 2020: 6th International Workshop on Symbolic-Numeric Methods for Reasoning about CPS and IoT (SNR), program co-chair
- SC^2 2019: Fourth International Workshop on Satisfiability Checking and Symbolic Computation, PC member.
- NSV 2019: 12th International Workshop on Numerical Software Verification, PC member.
- SNR 2019: The Fifth International Workshop on Symbolic-Numeric methods for Reasoning about CPS and IoT, PC member.
- WCGO 2019: 6th World Congress on Global Optimization 2019, Metz, France, PC member.
- LeGO 2018: 14th Int. Workshop on Global Optimization, Leiden, The Netherlands, PC member.

- Associate of EU project H2020-FETOPN-2015-CSA_712689: SC^2—Satisfiability Checking and Symbolic Computation, 2016–2018
- NSV 2018: 11th International Workshop on Numerical Software Verification, PC member
- SNR'18: 4th International Workshop on Symbolic and Numerical Methods for Reachability Analysis, PC member
- SETTA 2017: 3rd International Symposium on Dependable Software Engineering: Theories, Tools and Applications, PC member
- SNR'17: 3rd International Workshop on Symbolic and Numerical Methods for Reachability Analysis, PC member
- FORMATS'16: 14th International Conference on Formal Modelling and Analysis of Timed Systems, PC member
- SETTA'16: Second International Symposium on Dependable Software Engineering: Theories, Tools and Applications, Beijing, China, PC member
- SNR 2016: 2nd International Workshop on Symbolic and Numerical Methods for Reachability Analysis, CPSWeeks 2016, PC member
- SETTA'15: First International Symposium on Dependable Software Engineering: Theories, Tools and Applications, Nanjing, China, PC member
- SNR 2015: 1st International Workshop on Symbolic and Numerical Methods for Reachability Analysis, CAV affiliated), PC member
- PESW 2015: The 3rd Prague Embedded Systems Workshop, PC member
- ARCH 2015: 2nd International Workshop on Applied Verification for Continuous and Hybrid Systems, CPSWeek 2015, Seattle
- PESW 2014: The 2nd Prague Embedded Systems Workshop, PC member
- ARCH 2014: 1st International Workshop on Applied veRification for Continuous and Hybrid Systems, Cyber Physical Systems Week, Berlin, PC member
- HAS'14: 4th Workshop on Hybrid Autonomous Systems 2014, PC member
- SummerSim'14: 2014 Summer Simulation Multi-Conference (SCS/ACM SIGSIM), Monterey, CA, USA, PC member
- HSCC 2014: Hybrid Systems: Computation and Control, Berlin, Germany, PC member
- MACIS 2013: Fifth International Conference on Mathematical Aspects of Computer and Information Sciences, Nanning, China, PC member
- SCSS 2013: 5th International Symposium on Symbolic Computation in Software Science, Hagenberg, Austria, PC member
- ESW 2013: The 1st Embedded Systems Workshop, Temešvar, Czech Republic, PC member
- ICAPS 2013 workshop on Planning in Continuous Domains, PC member
- HSCC 2013: Hybrid Systems: Computation and Control, PC member

- SVARM & VERIFY Workshop 2012, associated with IJCAR 2012, PC member.
- NSV 2012: Fifth International Workshop on Numerical Software Verification, Berkeley, California, USA, PC member
- HSCC 2012: Hybrid Systems: Computation and Control, PC member
- MACIS 2011: "4th International Conference on Mathematical Aspects of Computer and Information Sciences", Beijing, China, program co-chair
- NSV-2011: "Fourth International Workshop on Numerical Software Verification", associated with CAV 2011, co-organizer
- QiCP'10: Third International Workshop on Quantification in Constraint Programming, St. Andrews, Scotland, 2010, PC Member
- SVARM: Workshop on Synthesis, Verification, and Analysis of Rich Models, Edinburgh, 2010, PC Member
- NSV-3: Third International Workshop on Numerical Software Verification, Edinburgh, 2010, PC Member
- FORMATS'10, 8th International Conference on Formal Modelling and Analysis of Timed Systems, PC Member
- QiCP'08: Second International Workshop on Quantification in Constraint Programming, Sydney, Australia, 2008, PC Member
- International Conference on Mathematical Aspects of Computer and Information Sciences, Beijing, China, 2006, Program Committee Member
- 8-th Asian Symposium on Computer Mathematics (ASCM), Seoul, 2005, co-organizer of Session "Computer Algebra and Control System design"
- Workshop on Interval Analysis and Constraint Propagation for Applications, IntCP 2005, Sitges, Spain, Member of Program Committee and Organizing Committee
- Workshop on Quantification in Constraint Programming, Sitges, Spain, 2005, Program Committee Member
- Workshop on Interval Analysis and Constraint Propagation for Applications, IntCP 2003, Kinsale, Ireland, Committee Member
- Assistance, organization of "First International Symposium on Parallel Symbolic Computation", 1994, Linz.
- Design and management of a 50K€/year aid program for the universities of Bosnia and Hercegovina in the sector of computer networking.

7 Refereeing Activities

- Review of project proposals for Dutch Research Council and Swiss National Science Foundation
- Reviewer for numerous journals
- Habilitation committee member for Pavel Parízek

8 Teaching and Communication of Science

Computer Assisted Formal Reasoning
Doctoral course 2021–
Czech Technical University, Prague

Systems Theory
Semester course WS 2012/2013– (2+1 hours, max. 250 students each)
Czech Technical University, Prague

Formal Methods and Specification
Semester course SS 2011– (2+1 hours, max. 80 students each)
Czech Technical University, Prague

Systems Modeling and Analysis
Semester course WS 2010/2011, 2011/12 (2+1 hours)
Czech Technical University, Prague

Two Talks at Czech Week of Science and Technology
November 2008

Hybrid Systems: Modeling, Simulation, Verification
Semester course WS 2008/2009 (2 hours)
Charles University, Prague

Global Optimization
Semester course WS 2007/2008 (2 hours)
Charles University, Prague

Solving Constraints over the Real Numbers
Semester course 2003/04 (2 hours of lecture and 2 hours of exercises per week)
Universität des Saarlandes, Germany

Solving Quantified Real-Number Constraints
RAAG Summer School on Tools for Real Algebraic Geometry, 2003
Rennes, France

Tutorial on Solving Real First-Order Constraints
Short Postgraduate Course
Universitat de Girona, Spain

Foundations of Computer Geometry
1 year course 1998/1999 (2 hours of lectures and 2 hours in lab per week)
Faculty of Natural Sciences and Mathematics
University of Sarajevo, Bosnia and Hercegovina

9 Supervision

Ph.D.: Jan Kuřátko (2020)

Master: Vojtěch Hovorka (2013), Tomáš Zrůst (2015), Ondřej Šmíd (2016), Tomáš Mahr (2018), Jiří Fejlek (2018), Libor Vytlačil (2018), Robert Husák (2018), Tomáš Kolárik (2018), Jan Onderka (2020)

Bachelor: Tomáš Makara (2014), Jiří Fejlek (2015), Pavel Frumert (2016), Jakub Kottnauer (2016), Peter Nagy (2023)