Martin Georg Fränzle
Helmsweg 38a
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Germany

Curriculum Vitae

1 Personal details

Name and title:	Dr. rer. nat. Martin Georg Fränzle, Professor	
Address:	*university* Research Group Hybrid Systems Department of Computing Science Carl von Ossietzky Universität Oldenburg D-26111 Oldenburg Germany	*private* Helmsweg 38a D-26135 Oldenburg Germany
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E-Mail:	`fraenzle@informatik.uni-oldenburg.de`	
Home page:	`http://hs.informatik.uni-oldenburg.de/`	
Date of birth:	October 23, 1964	
Nationality:	German	
Marital status:	Married since 1989, two children (born 1992 and 1996)	

2 Research interests

M. Fränzle's research interests are in modelling, verification, and synthesis of reactive, real-time, and hybrid dynamics in embedded and cyber-physical systems. He has worked on the semantics of high-level modelling and specification languages [12, 28, 31, 33, 41, 90, 91] and on decision problems and their application to verifying and synthesizing real-time and hybrid discrete-continuous systems [18, 23, 25, 27, 48, 68, 89, 70, 106, 111, a.o.], including settings subject to stochastic disturbances [86, 92, 97]. The complexity barrier rapidly hit by such automated verification and synthesis procedures has been attacked through extending bounded model checking to very expressive temporal logics [29, 36, 38], branching-time abstractions [64, 73, 74], and by developing SAT-modulo-theory techniques for arithmetic constraint solving and tailoring them to the specific formulae structures arising in different verification domains [45, 46, 83] and in synthesis [40, 42]. Furthermore, SAT-modulo-theory techniques for arithmetic constraint solving have been extended to the undecidable domain of arithmetic constraints involving transcendental functions [43, 53, 54] and ordinary differential equations [63, 67, 70, 101] as well as to stochastic variants facilitating the fully symbolic

analysis of probabilistic hybrid systems [59, 60, 69, 78, 93, 97]. Another major line of research deals with robust notions of system correctness, i.e. with the construction of correctness certificates which remain valid under the ubiquitous kinds of disturbances like, e.g., manufacturing tolerances [23, 27, 41, 43, 62, 71, 90]. Fundamental research on these topics has mostly been pursued within large collaborative research projects, like the Transregional Collaborative Research Center SFB-TR 14 AVACS (Automatic Verification and Analysis of Complex Systems, [52]) or recently the Research Training Group DFG GRK 1765 SCARE (System Correctness under Adverse Conditions).

Applied research within, a.o., the recent projects IMoST (Integrated Modelling for Safe Transportation), SaLsA (Sichere autonome Logistik- und Tranportfahrzeuge im Außenbereich), and MoVeS (Modeling, Verification and Control of Complex Systems), as well as within two industrial research contracts with DENSO Automotive and Volkswagen addresses industrial application domains, which range from advanced driver assistance systems (IMoST [81, 99, 103], Volkswagen) via self-driving cars (SaLsA [98], DENSO) to demand-response schemes in power supply networks (MoVeS [96, 110]). These lines of applied research are now extended within the Interdisciplinary Research Center Critical Systems Engineering for Socio-Technical Systems, where the safety impact of operator assistance both for maritime and road-bound transportation is investigated in cooperation with the pertinent industry within dedicated living labs.

3 Employment

since 2004/10: Professor (salary scale W 2) at the Department of Computing Science at the Carl von Ossietzky Universität Oldenburg, Germany; head of research group '"Hybrid Systems"'

2002/07–2004/09: Associate professor in Computer Science and Engineering at the Informatics and Mathematical Modelling department of the Technical University of Denmark, Kgs. Lyngby, Denmark.

2000/07–2002/06: German equivalent to an assistant professor (German C 1 scale) at the Department of Computing Science at the Carl von Ossietzky Universität Oldenburg, Germany.

1997/09–2000/06: Post-doctoral researcher at the Department of Computer Science of the Carl von Ossietzky Universität Oldenburg, Germany; member of the research group “Computer Architecture”.

1991/03–1997/08: Research assistant at the Dpt. of Informatics of the Christian-Albrechts-Universität Kiel, Germany; member of the research group “Programming Languages and Compiler Construction”.

1989/06–1991/02: Student researcher in the ESPRIT basic research action 3104 “Provably Correct Systems: ProCoS” at the Dpt. of Informatics of the Christian-Albrechts-Universität Kiel.

1985/07–1989/05: Part-time programmer in the Dpt. of Geography of the Chr.-Albrechts-Universität Kiel, designing and implementing algorithms for computer-based cartography and for statistics in geo-ecological research.

1983/06–1992/10: Voluntary service as a paramedic in the ambulance and rescue services at Preetz, Germany.

4 Other affiliations

Since 2013/09: Member of the working group on Harmonization of Pre-Crash Evaluation of the European automotive industry

Since 2013/04: Member of the Interdisciplinary Research Center Critical Systems Engineering for Socio-Technical Systems of Oldenburg University, OFFIS, and DLR Brunswick

Since 2012/10: Co-speaker of the Research Training Group (RTG) SCARE (System Correctness under Adverse Conditions) funded by the German Research Foundation (DFG GRK 1765).

2007–2010: Member of the Virtual Institute DESCAS (Design of Safety Critical Systems) of the Helmholtz Association of German Research Centres (http://www.dlr.de/fs/desktopdefault.aspx/tabid-4534/7430_read-11178/).

2006/01–2008/12: Velux Visiting Professor at the Technical University of Denmark, Kgs. Lyngby, Denmark

Since 2005/04: Supervisor in the DFG Graduate School on Trustworthy Software Systems (Trustsoft, http://www.uni-oldenburg.de/trustsoft/en/)

Since 2004/12: Member of OFFIS Intitut für Informatik e.V., Oldenburg, Germany (http://www.offis.de/).

Since 2004/10: Member of the Interdisciplinary Research Center Safety-Critical Systems at the University of Oldenburg, Germany (http://fzsks.uni-oldenburg.de/index_en.html).

Since 2004/08: Project area coordinator within the transregional research center SFB-Transregio 14 "Automatic Verification and Analysis of Complex Systems" (AVACS) for project area Hybrid Systems (http://www.avacs.org)

Research stays: Oxford University, UK (multiple short stays between 1989 and 1995; June 2013); Max-Planck-Institut für Dynamik komplexer technischer Systeme, Magdeburg, Germany (April 2000); IT University København, Denmark (Oct. 2000); Verimag, Grenoble, France (March 2001); Institut für Informatik, Universität Freiburg, Germany (multiple short stays since March 2002); Tallinn Technical University, Estonia (May 2004); Universität des Saarlands and Max-Planck-Institut für Informatik, Saarbrücken, Germany (multiple short stays since 2004); Velux Visiting Professor at the Technical University of Denmark, Kgs. Lyngby, Denmark (part-time lecturer Jan. 2006 to Dec. 2008).

5 Education

1970/08–1974/06: Primary school in Aachen-Haaren (August to October 1970) and Schellhorn near Kiel (from November 1970)

1974/08–1983/06: Friedrich-Schiller-Gymnasium Preetz

1983/05: Abitur (approx. A Level)

1983/06–1985/08: Part-time apprenticeship as "Rettungssanitäter" (standard qualification of the paramedics in the German ambulance and rescue services at that time)

10/1983–02/1991: Study of informatics, mathematics, and logics at the Christian-Albrechts-Universität Kiel

1985/09–1990/12: Part-time apprenticeship as "Rettungsassistent" (highest qualification available to paramedics in the German ambulance and rescue services)

1986/05: Vordiplom (approx. B. Sc.) in informatics from the Dpt. of Informatics at Christian-Albrechts-Universität Kiel; grade: 1.0[1].

1990/12: Granted title "Rettungsassistent" by Schleswig-Holstein's State Ministry of Health after a formal review rated the continued voluntary service and the associated part-time apprenticeship equivalent to a 3-year full-time apprenticeship as a paramedic.

[1] In a scale from 1 (best) to 5 (insufficient).

1991/02: Diplom (approx. M. Sc.) in informatics from Dpt. of Informatics of the Christian-Albrechts-Universität Kiel; grade: 1.0[1].
Title of diploma thesis: *Specification and verification of a translator for a recursive,* occam*-like programming language*

1997/04: Doctoral degree in natural sciences (Dr. rer. nat.) from the Technical Faculty of the Christian-Albrechts-Universität Kiel; grade: "summa cum laude".
Title of dissertation: *Controller Design from Temporal Logic: Undecidability Need Not Matter* (submitted Dec. 1996, defence April 1997; reviewers: Hans Langmaack, Wolfgang Thomas, Bengt Jonsson)

6 Teaching experience

At Christian-Albrechts-Universität Kiel, 1991–1997

Summer 1992: Lectures and exercise classes "Introduction to systematic programming" for students in the natural sciences

Winter 92/93: Exercise classes in "Computer Science III"

Summer 93: Exercise classes in "Provably correct systems I"

Winter 93/94: Seminar "Safety-critical systems" (together with H. Langmaack)

Summer 96: Seminar "Provably Correct Hardware Compilation" (together with H. Langmaack)

Summer 97: Seminar "Recent research results in programming languages and compiler construction" (together with H. Langmaack)

At Carl von Ossietzky Universität Oldenburg, 1997–2002

Summer 1998: Advanced lectures on "Automatic controller synthesis from regular languages"

Summer 1999: Lectures and exercise classes "Design of embedded systems" (together with W. Damm, K. Lüth, and B. Josko).

Summer 2000: Lectures and exercise classes "Safety-critical embedded systems" (together with W. Damm and J. Bohn).

Winter 2000/01: Advanced lectures on "Hybrid systems".

Summer 2001: Lab course "Design of robotics systems with StateMate" (together with D. Janssen and A. Metzner).

Winter 2001/02: Lectures and exercise classes "Embedded systems I" (entry module of the curriculum in Embedded Systems at Oldenburg).

At the Technical University of Denmark, 2002–2004

Fall 2002: Lectures and exercise classes "Languages and Parsing" (together with M. R. Hansen)

Spring 2003: Lectures and exercise classes "Real-Time Systems"

Spring 2003: Ph.D. course "Advanced Analysis and Verification Techniques" (together with H. R. Nielson and F. Nielson)

Apr. 2003: Research seminar "Safe and Secure IT Systems"

Fall 2003: Lectures and exercise classes "Languages and Parsing" (together with M. R. Hansen)

Fall 2003: Lectures and exercise classes “Distributed Embedded Systems” (together with K. S. Christensen)

Jan. 2004: Lab course “Distributed Embedded Systems” (together with K. S. Christensen)

Spring 2004: Lectures and exercise classes “Real-Time Systems”

Fall 2004: Lectures and exercise classes “Distributed Embedded Systems” (together with K. S. Christensen)

At Carl von Ossietzky Universität Oldenburg, since 2004

Summer 2005: Lectures and exercise classes “Formale Methoden Eingebetteter Systeme” (Formal Methods for Embedded System design)

Summer 2005: Seminar “Hybrid diskret-kontinuierliche eingebettete Systeme'” (Hybrid discrete-continuous systems)

Summer 2005: Project group “Car Platooning” (together with W. Damm, A. Metzner, A. Mikschl)

Winter 2005/06: Lectures and exercise classes “Eingebettete Systeme I” (Embedded systems I)

Winter 2005/06: Lectures and exercise classes “Modellbasierte Entwicklung eingebetteter Systeme” (Model-based Design of Embedded Systems; together with B. Josko and H. Hungar)

Winter 2005/06: Project group “Car Platooning” (together with W. Damm, A. Metzner, A. Mikschl)

Summer 2006: Lectures and exercise classes “Eingebettete Systeme II” (Embedded systems II)

Summer 2006: Lectures and exercise classes “Formale Methoden Eingebetteter Systeme” (Formal Methods for Embedded System design)

Winter 2006/07: Lectures and exercise classes “Hybrid diskret-kontinuierliche Systeme” (Hybrid discrete-continuous systems)

Summer 2007: Lectures and exercise classes “Formale Methoden Eingebetteter Systeme” (Formal Methods for Embedded System design)

Summer 2007: Seminar “An der Grenzlinie der Entscheidbarkeit: Berechnungsmodelle zwischen Echtzeit und hybrid diskret-kontinuierlichem Verhalten” (At the borderline of decidability: computational models between real-time and hybrid discrete-continuous dynamics; together with E.-R. Olderog)

Winter 2007/08: Lectures and exercise classes “Compilerbau” (Compiler construction)

Winter 2007/08: Project group “easyDrive - Einfädelungsassistent für Autobahnanschlussstellen” (easyDrive — a lane change assistant for motorway access; together with W. Damm and G. Ehmen)

Summer 2008: Lectures and exercise classes “Formale Methoden Eingebetteter Systeme” (Formal Methods for Embedded System design)

Summer 2008: Project group “easyDrive - Einfädelungsassistent für Autobahnanschlussstellen” (easyDrive — a lane change assistant for motorway access; together with W. Damm and G. Ehmen)

Winter 2008/09: Lectures and exercise classes “Technische Informatik I” (Introduction to Technical Computer Science)

Winter 2008/09: Lectures and seminar “Design of Safety-Critical Automotive Systems”

Winter 2009/10: Lectures and seminar “Mechanismen der automatischen Fahrzeugführung” (Principles of Autonomous Driving)

Winter 2009/10: Seminar “Spielen der Korrektheit wegen: Spiele im Entwurf eingebetteter Systeme” (Game Theory for Synthesis of Embedded Systems)

Summer 2010: Lecture “Formale Methoden eingebetteter Systeme” (Formal Methods for Embedded System design)

Summer 2010: Lecture “Hybride Systeme” (Hybrid Systems)

Summer 2010: Seminar “Automatisierte Techniken für die Analyse komplexer Systeme” (Automatic Analysis of Complex Systems)

Winter 2010/11: Lecture “Technische Informatik I” (Introduction to Technical Computer Science)

Winter 2010/11: Practical course “Quantitatives Model-Checking” (Quantitative Model Checking)

Winter 2010/11: Proseminar “Kooperative und mobile Systeme” (Cooperating and Mobile Ssytems)

Summer 2011: Lecture “Formale Methoden eingebetteter Systeme” (Formal Methods for Embedded System design)

Summer 2011: Lecture “Signal- und Bildverarbeitung” (Signal and Image Processing; first half of semester)

Summer 2011: Student project group “ReACT 2” (autonomous driving in protected spaces; together with A. Hahn and W. Damm)

Winter 2011/12: Lecture “Hybride Systeme” (Hybrid Systems)

Winter 2011/12: Student project group “ReACT 2” (continuation; together with A. Hahn and W. Damm)

Winter 2011/12: Lecture series “IKT zur Energieeffizienz” (IT for Energy Efficiency; together with M. Sonnenschein, S. Lehnhoff, H.-J. Appelrath et al.)

Winter 2011/12: Proseminar “Why Computerized Systems Fail”

Summer 2012: Lecture “Modellierung und Analyse eingebetteter Systeme” (Formal Methods for Embedded System design)

Summer 2012: Lecture “Signal- und Bildverarbeitung” (Signal and Image Processing; first half of semester)

Winter 2012/13: Lecture “Grundlagen der Technischen Informatik” (Introduction to Technical Computer Sceince)

Winter 2012/13: Lecture “Hybride Systeme” (Hybrid Systems)

Winter 2012/13: Proseminar “Spielen der Korrektheit wegen” (Game Theory for Design and Analysis of Embedded Systems)

Winter 2012/13: Lecture series “IKT zur Energieeffizienz” (IT for Energy Efficiency; together with M. Sonnenschein, S. Lehnhoff, H.-J. Appelrath et al.)

Summer 2013: Lecture “Modellierung und Analyse eingebetteter Systeme” (Formal Methods for Embedded System design)

Summer 2013: Lecture “Signal- und Bildverarbeitung” (Signal and Image Processing; first half of semester)

Summer 2013: Student project group “MIPSwarm” on autonomous service robotics (together with W. Damm)

Winter 2013/14: Lecture “Grundlagen der Technischen Informatik” (Introduction to Technical Computer Sceince)

Winter 2013/14: Lecture “Hybride Systeme” (Hybrid Systems)

Winter 2013/14: Student project group “MIPSwarm II” on autonomous service robotics (together with W. Damm)

plus

- a permanent group seminar, where BSc, MSc, and PhD students report on the progress of their thesis work,
- the seminar of the transregional research center SFB/TR 14 “Automatic Verification and Analysis of Complex Systems” (AVACS),
- the seminar of the DFG Graduate School on Trustworthy Software Systems (Trustsoft) or — since 2012— its successor System Correctness under Adverse Conditions (SCARE)
- the mentoring programme for BSc and MSc students in CS

throughout all the aforementioned semesters.

PhD courses and invited tutorials at various places

Nov. 2002: Norchip Tutorial “Design and Verification of Embedded Computing Systems” for Scandinavian Ph.D. students, Copenhagen, Denmark (together with J. Madsen)

May 2004: Summer school “Advanced Topics in Computer Science”, Tallinn Technical University, Tallinn, Estonia

June 2007: ARTIST2 PhD course “Automated Formal Methods for Embedded Systems”, Technical University of Denmark, Kgs. Lyngby, Denmark (together with S. Perathoner, N. Stoimenov, W. Haid, A. Hamann, R. Racu)

July 2007: Invited tutorial “Verification of Hybrid Systems” at CAV 2007, Berlin, Germany

June 2008: ARTIST2 PhD course “Automated Formal Methods for Embedded Systems”, Technical University of Denmark, Kgs. Lyngby, Denmark (together with J. Vain)

Sept. 2008: Summer school “Verification Technology, Systems & Applications” of the Université franco-allemande, Saarbrücken, Germany (together with C. Barrett, G. Barthe, R. Mateescu, G. Sutre)

Aug. 2009: Summer school “Modern Computational Science”, Oldenburg, Germany (together with colleagues from the Departments of Physics, Mathematics, Biology, and Marine Sciences)

Mar. 2010: PhD School Quantitative Model Checking (QMC ’10), ITU København, Denmark (Lecture on “Automatic Analysis of Hybrid Systems”)

Mar. 2010: 1st AVACS Spring School, Oldenburg, Germany (Lecture on “From Efficient SAT Solving to Automatic Analysis of Hybrid Systems”)

June 2010: International Summer School Modelling and Verification of Parallel Processes (MoVeP 2010), RWTH Aachen, Germany (Lecture on “Bounded Model Checking of Hybrid Systems”)

Sep. 2010: Summer Camp Informatik — Entfesselte Automaten, Universität des Saarlands, Saarbrücken, Germany (Lecture on “Hybride Systeme”)

June 2012: 2nd International SAT/SMT Summer School, Fondazione Bruno Kessler, Trento, Italy (Lecture on “SMT modulo Ordinary Differential Equations”)

Aug. 2012: Summer School Modern Computational Science, Universität Oldenburg, Germany (Lecture on “Interval Methods I & II”)

Oct. 2012: ROCKS Autumn School, Kloster Neustift, Varn, Italy (Lecture on “Applications of Hybrid Systems”)

Apr. 2013: Invited tutorial “Cyber-Physical Systems” at ETAPS 2013, Rome, Italy

7 Graduate and undergraduate students

Current Ph.D. students

1. MSc Andreas Eggers, "Integrating SAT-Modulo-Theory and Safe Integration of ODEs" (expected graduation spring 2014)
2. Dipl.-Inform. Christian Ellen, "Integrating Systematic Search and Statistical Model-Checking for Stochastic Satisfiability Modulo Theory"
3. Dipl.-Inform. Sönke Eilers, "Prädiktion und Bahnplanung für sicheres autonomes Fahren" (thesis submitted Dec. 2013)
4. MSc Gao Yang, "Automatic Analysis of Stochastic Hybrid Systems"
5. MSc Saifullah Khan, "Geometry-Predicting Ad-Hoc Routing Protocols for Car2X Applications"
6. MSc Ahmed Mahdi, "A CEGAR Approach for Stochastic Hybrid Systems"
7. Dipl.-Inform. Stefan Puch, "Co-Simulation in der modellbasierten Entwicklung von Fahrerassistenzsystemen"
8. Dipl.-Inform. Gerald Sauter, "Automatische modellbasierte Bewertung der Sicherheitskritikalität von Mensch-Maschine-Interaktionen"
9. MSc Sven Sieverding, "Test Automation for Embedded Real-Time Systems"
10. M.Tech. Mani Swaminathan, "A Framework for Efficient Symbolic Robust Safety Analysis of Timed Systems" (expected graduation spring 2014)

Furthermore, I am currently co-supervising Liang Zou at the Institute of Software of the Chinese Academy of Sciences and Björn Engelmann, Bertram Wortelen, and Ralph Görgen at the University of Oldenburg.

Former Ph.D. students

1. Dr. rer. nat. Christian Herde, "Efficient Solving of Large Arithmetic Constraint Systems with Complex Boolean Structure — Proof Engines for the Analysis of Hybrid Dynamical Systems" (2010, grade "summa cum laude")
2. Dr. rer. nat. Tino Teige, "Stochastic Satisfiability Modulo Theory: A Technique for the Analysis of Probabilistic Hybrid Systems" (2012, grade "summa cum laude")

I furthermore served as chair or reviewer on multiple PhD committees at Oldenburg (more than 20 committees since 2004), as reviewer and committee member at Freiburg (3 committees), Saarbrücken (3 committees), Kgs. Lyngby (1 committee), and Oslo (1 committee), as well as committee member for the Distinguished Dissertation Competition 2013 of the BCS Academy of Computing.

BSc, MSc, and Diploma students. I am permanently supervising BSc and MSc students in the areas of theoretical computer science (especially model checking and SAT/SMT solving), technical computer science (modeling and analysis of hybrid, embedded, and real-time systems), and related applications (in particular autonomous driving, advanced driver assistance, control of power networks). The total number of theses supervised at bachelor's, master's, and diploma student level is around 50.

8 Services in the self-administration of the university, of affiliated institutes, and of collaborative research actions

since 2004/08: Member of the board of the transregional research center SFB-Transregio 14 “Automatic Verification and Analysis of Complex Systems” (AVACS) for project area Hybrid Systems (http://www.avacs.org)

since 2004/11: Person in charge for internationalization at the Dpt. of Computing Science, Carl von Ossietzky Universität Oldenburg

2004/11 – 2009/03: Person in charge for federal student support (BAFöG) at the Dpt. of Computing Science, Carl von Ossietzky Universität Oldenburg

2007/01–2013/03: Member of the board of the collaborative research actions IMoST and IMoST II (Integrated Modeling for Safe Transportation; Universität Oldenburg, DLR Brunswick, and OFFIS Institut für Informatik)

Since 2011/03: Member of the university president’s panel for advancement of internationalization, Carl von Ossietzky Universität Oldenburg

Since 2011/03: Member of the board of research division Transportation, OFFIS Institut für Informatik, Oldenburg

2011/04–2013/03: Deputy member of the university senate, Carl von Ossietzky Universität Oldenburg

Since 2012/07: Member of the board of the Interdisciplinary Research Center Safety-Critical Systems at the University of Oldenburg

Since 2012/10: Co-speaker of the Research Training Group (RTG) SCARE (System Correctness under Adverse Conditions) funded by the German Research Foundation (DFG GRK 1765).

2013/04–2015/03: Member of the university senate, Carl von Ossietzky Universität Oldenburg

2013/10–2015/03: Dean of Faculty II: School of Computing Science, Business Administration, Economics, and Law at the Carl von Ossietzky Universität Oldenburg

9 Projects

1. ESPRIT BRA 3014 “ProCoS I — Provably Correct Systems”: Researcher (1989–91).
2. Project “APPLY — ein bedarfsgerechtes und effizientes LISP”, funded by the German Ministry of Research and Technology: Researcher (1991–92).
3. DFG-La 426/13-1 “Echtzeitmodelle (models of real-time)”, funded by the Deutsche Forschungsgemeinschaft: Applicant and researcher (1993–95).
4. ESPRIT BRA 7071 “ProCoS II — Provably Correct Systems”: Contribution to fund-raising (1992) and association to the project (1992–95).
5. DFG-La 426/13-12 “Semantische Modelle, Verfeinerungskonzepte und Beweisregeln für Echtzeitmodelle (semantic models, refinement concepts, and proof rules for real-time models)”, funded by the Deutsche Forschungsgemeinschaft: Applicant and researcher (1993–95).
6. ESPRIT WG 8694 “ProCoS-WG”: Member (1994–97).
7. DFG-Da 206/5-1 “Events I — An event-driven approach to rapid prototyping of embedded control systems”, funded by the Deutsche Forschungsgemeinschaft: Researcher (1997–98).

8. DFG-Da 206/5-2 “Events II”, funded by the Deutsche Forschungsgemeinschaft: Contribution to fund-raising and researcher (1998–2000).

9. DFG-Da 206/5-3 “Events III”, funded by the Deutsche Forschungsgemeinschaft: Contribution to fund-raising (2000).

10. SFB/TR 14/1 “Automatic Verification and Analysis of Complex Systems” (AVACS), subproject H1 “Deduction and Automata Based Approaches”: Applicant and subproject coordinator (1.1.2004–31.12.2007)

11. SFB/TR 14/1 “Automatic Verification and Analysis of Complex Systems” (AVACS), subproject H2 “Bounded Model Checking and Inductive Verification of Hybrid Systems”: Applicant and subproject leader (1.1.2004–31.12.2007)

12. Velux Visiting Professors Programme (Velux Fonden, Søborg, Denmark, 1.1.2006–31.12.2008): grant for extended research stays at the Technical University of Denmark

13. Collaborative research action “IMoST: Integrated Modelling for Safe Transportation” funded by the State of Lower Saxony: applicant and subproject coordinator (1.1.2007–31.03.2010)

14. Virtual Institute DESCAS (Design of Safety Critical Systems) of the Helmholtz Association of German Research Centres: member 2007-2010 (Az. VH-VI-212)

15. SFB/TR 14/2 “Automatic Verification and Analysis of Complex Systems” (AVACS), subproject H1/2 “Constraint-Based Verification for Hybrid Systems”: Applicant and subproject coordinator (1.1.2008–31.12.2011)

16. SFB/TR 14/2 “Automatic Verification and Analysis of Complex Systems” (AVACS), subproject H4 “Automatic Verification of Hybrid System Stability”: Applicant and subproject leader (1.1.2008–31.12.2011)

17. SFB/TR 14/2 “Automatic Verification and Analysis of Complex Systems” (AVACS), subproject R1 “Beyond Timed Automata”: Applicant and subproject leader (1.1.2008–31.12.2011)

18. “Sichere autonome Logistik- und Transportfahrzeuge im Außenbereich (SaLsA)” together with Götting KG, Fraunhofer Institut für Materialfluss und Logistik IML, Innotec DATA GmbH & Co. KG, IFM electronic GmbH, all Germany (German Ministry of Economics and Labour, Nov. 2009 – Oct. 2012)

19. Collaborative research action “IMoST II: Integrated Modelling for Safe Transportation” funded by the State of Lower Saxony: applicant and subproject coordinator (1.4.2010 – 31.3.2013)

20. EU FP7 STREP “Modelling, verification and control of complex systems: From foundations to power network applications (MoVeS)” under ICT Call 5, together with ETH Zurich, RWTH Aachen, TU Delft, and Politecnico di Milano (Oct. 2010–Sept. 2013)

21. SFB/TR 14/3 “Automatic Verification and Analysis of Complex Systems” (AVACS), subproject H1/2 “Constraint-Based Verification for Hybrid Systems”: Applicant and subproject coordinator (1.1.2012–31.12.2015)

22. SFB/TR 14/3 “Automatic Verification and Analysis of Complex Systems” (AVACS), subproject H4 “Automatic Verification of Hybrid System Stability”: Applicant and subproject leader (1.1.2012–31.12.2015)

23. SFB/TR 14/3 “Automatic Verification and Analysis of Complex Systems” (AVACS), subproject R1 “Beyond Timed Automata”: Applicant and subproject leader (1.1.2012–31.12.2015)

24. Interdisciplinary Research Center on “Critical Systems Engineering for Socio-Technical Systems” funded by the State of Lower Saxony: applicant and principal investigator in three subprojects (April 2013 – March 2016)

25. Industrial research contract by DENSO Automotive concerning safety of autonomous driving (May – December 2013, followup contract under negotiation)

26. Industrial research contract by Volkswagen Corporate Research concerning use of ancillary information services in advanced driver assistance systems (July – December 2013)

27. EU FP 7 "Cooperative dynamic formation of platoons for safe and enery-optimized goods transportation (COMPANION)", together with Volkswagen Group Research, KTH Stockholm, IDIADA Automotive Technology in Spain, S&T Netherlands, and Transportes Cerezuela in Spain (1.10.2013–30.9.2016)

28. SFB/TR 14/3 "Automatic Verification and Analysis of Complex Systems" (AVACS), subproject T1 "Accurate Dead Code Detection in Embedded C Code by Arithmetic Constraint Solving": Applicant and subproject coordinator (1.1.2014–30.6.2016)

10 Services to the scientific community

Recent program committees (last 5 years)

- ECAI (21st European Conference on Artificial Intelligence) 2014)
- FORMATS (12th International Conference on Formal Modeling and Analysis of Timed Systems) 2014
- SIMUL (The Sixth International Conference on Advances in System Simulation) 2014
- MoVeP (School for young researchers about Modelling and Verifying Parallel processes) 2014
- SETTA (Symposium on dependable Software Engineering: Theories, Tools and Applications) 2014 (PC chair)
- HSCC (Hybrid Systems: Computation and Control) 2014 (PC Chair)
- TACAS (Tools and Algorithms for the Construction and Analysis of Systems) 2014
- SIMUL (5th International Conference on Advances in System Simulation) 2013
- EMSOFT (13th International Conference on Embedded Software) 2013
- ICTAC (10th International Colloquium on Theoretical Aspects of Computing) 2013
- 3rd Workshop on Hybrid Autonomous Systems, ETAPS 2013
- SEFM (11th International Conference on. Software Engineering and Formal Methods) 2013
- 5th Small Workshop on Interval Methods 2012 (PC chair and organizing chair)
- SEFM'12 (Tenth International Conference on Software Engineering and Formal Methods) 2012
- EMSOFT (12th International Conference on Embedded Software) 2012
- MoVeP (School for young researchers about Modelling and Verifying Parallel processes) 2012.
- FESCA@ETAPS (Formal Engineering Approaches to Software Components and Architectures) 2011
- FORMATS (9th International Conference on Formal Modeling and Analysis of Timed Systems) 2011
- SEFM'11 (Ninth International Conference on Software Engineering and Formal Methods) 2011

- FSTTCS (31st IARCS Annual Conference on Foundations of Software Technology and Theoretical Computer Science) 2011
- 1st Workshop on Hybrid Autonomous Systems at ETAPS 2011 (PC chair)
- SMT'11: 9th International Workshop on Satisfiability Modulo Theories, 2011
- SUMo (International Workshop on Scalable and Usable Model Checking for Petri Nets and other models of concurrency) 2010
- iFM (International Conference on integrated Formal Methods) 2010
- CAV (International Conference on Computer Aided Verification) 2010
- HSCC (Hybrid Systems: Computation and Control) 2010
- International Workshop on Modeling and Verification of Uncertain Hybrid Systems at the CPS week 2010
- FESCA@ETAPS (Formal Engineering Approaches to Software Components and Architectures) 2010
- FORMS/FORMAT (Formal Methods for Automation and Safety in Railway and Automotive Systems) 2010
- 1st AVACS Spring School 2010 (PC chair and organizing chair)
- FORMATS (International Conference on Formal Modelling and Analysis of Timed Systems) 2009
- CAV (International Conference on Computer Aided Verification) 2009
- FAC - Workshop on Formal Verification of Analog Circuits, Workshop at CAV 2009
- HSCC (Hybrid Systems: Computation and Control) 2009
- FESCA@ETAPS (Formal Engineering Approaches to Software Components and Architectures) 2009
- iFM (International Conference on Integrated Formal Methods) 2009

Current responsibilities as chair or organizer:

- Demo and exhibition chair of CPS Week 2014
- PC chair of HSCC 2014 (together with John Lygeros)
- PC chair of SETTA 2014 (together with Li Xuandong)
- Co-organizer of Dagstuhl Seminar 14441 "Modeling, Verification, and Control of Complex Systems for Energy Networks", Oct. 26–31, 2014 (together with Alessandro Abate, Ian Hiskens, Martin Strelec)

Reviews for journals

Reviews for numerous journals, among them

- Information and Computation
- Formal Methods in System Design
- Formal Aspects of Computing
- Automatica
- Information Processing Letters
- International Journal of Software and Informatics
- Theory of Computing Systems
- Theoretical Comupter Science
- Information Sciences
- Journal of Computer and Systems Sciences
- IEEE Transactions on CAD
- Acta Informatica
- European Journal in Control
- International Journal of Applied Mathematics & Computer Science
- Science of Computer Programming
- Journal of Selected Topics in Signal Processing
- Artificial Intelligence Journal

Member of editorial board of the Leibniz International Transactions on Embedded Systems.

Project reviews for national and European science foundations

- Deutsche Forschungsgemeinschaft (DFG), Germany
- Netherlands Organisation for Scientific Research (NWO), The Netherlands
- Agence Nationale Recherche (ANR), France
- EU FP 7
- European Research Council (ERC Starting Grants)
- Icelandic Research Fund
- Swiss National Science Foundation

11 Publications

Chronological list

[1] Martin Fränzle. Verification of compilers for recursive occam-like languages. ProCoS Technical Report Kiel MF 8/1, Christian-Albrechts-Universität Kiel, Germany, 1990.

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