Curriculum Vitae

DI (FH) Dr. Stefan Mitsch

Carnegie Mellon University
Computer Science Department
5000 Forbes Ave, GHC 7127
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PERSONAL RECORD

Citizenship:	Austrian	Date of Birth:	October 18th, 1979
Birth name:	Stefan Schmid		

EDUCATIONAL RECORD

SCHOOL EDUCATION

09/1986–07/1990	Primary Level:	Volksschule Frankenmarkt, Austria
09/1990–07/1994	Secondary Level:	Realgymnasium Vöcklabruck, Austria
09/1994–07/1999	Third Level:	Secondary Technical College Braunau, Osternbergerstraße 55 A-5280 Braunau am Inn, Austria
1999 June	Graduation Diploma:	Electronics, communications engineering and computer science WITH DISTINCTION

ACADEMIC EDUCATION

PhD Studies

10/2006–12/2011	**PHD COMPUTER SCIENCE**	Johannes Kepler University Linz, Austria

TOWARDS QUALITATIVE PREDICTION OF SITUATION EVOLUTION IN DYNAMIC SPATIAL SYSTEMS

ADVISERS:
a.Univ.-Prof. Mag. Dr. Werner Retschitzegger
Assoc.-Prof. Mag. Dr. Wieland Schwinger, MSc
WITH DISTINCTION

PROMOTIO SUB AUSPICIIS PRAESIDENTIS REI PUBLICAE

Diploma Studies

10/2000–07/2004	**SOFTWARE ENGINEERING** DI (FH)	Upper Austria University of Applied Sciences, Hagenberg Campus WITH DISTINCTION

THESIS:
REALTIME REMOTE PROFILING JAVA APPLICATIONS ON MOBILE DEVICES

ADVISER:
FH-Prof. DI Dr. Werner Christian Kurschl

EMPLOYMENT RECORD

SYSTEM SCIENTIST	5/2016-present	Computer Science Department Carnegie Mellon University 5000 Forbes Ave Pittsburgh, PA 15213, USA
SENIOR SCIENTIST Participation in various research projects	1/2012–4/2016	Institute of Telecooperation, Dep. of Cooperative Information Systems, Johannes Kepler University Linz, Altenberger Straße 69, 4040 Linz, AUSTRIA
POSTDOCTORAL FELLOW	11/2012-4/2015	Computer Science Department Carnegie Mellon University 5000 Forbes Avenue Pittsburgh, PA 15213, USA
PHD CANDIDATE Participation in various research projects	4/2009–12/2011	Institute of Telecooperation, Dep. of Cooperative Information Systems, Johannes Kepler University Linz, Altenberger Straße 69, 4040 Linz, AUSTRIA
MARSHALL PLAN SCHOLAR Modeling and Verification of Continuous Object Behavior and Discrete Control Actions in Situation Awareness Systems	7/2011–10/2011	Computer Science Department, Carnegie Mellon University, 5000 Forbes Avenue, Pittsburgh, PA 15213, USA
LECTURER	3/2005–6/2013	Upper Austria University of Applied Sciences, Hagenberg Campus Softwarepark 11, 4232 Hagenberg, AUSTRIA
RESEARCH ASSOCIATE Participation in various research projects	8/2004–3/2009	Upper Austria University of Applied Sciences R&D, Hagenberg Campus Softwarepark 11, 4232 Hagenberg, AUSTRIA
INTERN	12/2003–6/2004	Siemens AG Corporate Technology—Software and Engineering II Otto-Hahn-Ring 6, Munich, GERMANY
		Improving the performance of Java-based route guidance systems for BMW, development of a native profiling back-end add-on for Java CDC VM and comparison with an AOP-based back-end, implementation of a Java profiling front-end with Swing
INTERN	8/2003–11/2003	S.C. Art-Net SRL Cluj Napoca, ROMANIA
		Evaluation of Java Portlets integration with Jakarta Struts in Oracle 10g application server, development of a Web-based event management system

TEACHING RECORD

UNIVERSITY LECTURES

SPEZIELLE KAPITEL AUS INFORMATIK:
  SEMANTISCHE TECHNOLOGIEN IN
  SITUATION AWARENESS
  APPLIKATIONEN
  COMBINED LECTURE: Situation
  Awareness, Qualitative Spatio-
	3 ECTS	Johannes Kepler University Linz
		2011/12 winter 1 group

Temporal Reasoning, Planning and
Verification of Dynamic Spatial
System Evolution

SOFTWARE ENTWICKLUNG 5 LECTURE & EXERCISE COURSE: Java Web application development, J2EE design patterns, database access	5 ECTS	Upper Austria University of Applied Sciences, Hagenberg Campus, degree program Bioinformatics		
		2011/12	winter	2 groups
		2010/11	winter	1 group
		2009/10	winter	1 group
		2008/09	winter	1 group
MOBILE AND UBIQUITOUS SYSTEMS EXERCISE COURSE: Speech synthesis and recognition, wireless sensor networks (nesC, Sentilla JCreate), gesture control (Kinect)	1.5 ECTS	Upper Austria University of Applied Sciences, Hagenberg Campus, degree program Software Engineering, and Information Engineering & Management		
		2012	summer	2 groups
		2011	summer	1 group
		2010	summer	2 groups
		2009	summer	2 groups
		2008	summer	2 groups
		2007	summer	2 groups
SOFTWARE ENTWICKLUNG 4 EXERCISE COURSE: Programming in Java, design patterns	3 ECTS	Upper Austria University of Applied Sciences, Hagenberg Campus, degree program Bioinformatics (since 2011: Medical and Bioinformatics)		
		2012	summer	2 groups
		2011	summer	2 groups
		2010	summer	1 group
		2009	summer	1 group
		2008	summer	1 group
		2007	summer	1 group
		2006	summer	1 group
SOFTWARE ENTWICKLUNG 3 EXERCISE COURSE: Programming in C++, object-oriented programming	3 ECTS	Upper Austria University of Applied Sciences, Hagenberg Campus, degree program Bioinformatics		
		2009/10	winter	1 group
		2008/09	winter	1 group
		2007/08	winter	1 group
		2006/07	winter	1 group
		2005/06	winter	1 group
PROJECT ENGINEERING STUDENT PROJECT (SUPERVISOR ASSISTANT)	2 ECTS	Upper Austria University of Applied Sciences, Hagenberg Campus, degree program Software Engineering		
		2008	summer	1 group
		2007/08	winter	1 group
DATA ENGINEERING EXERCISE COURSE: UML 2.0 and XML	2 ECTS	Upper Austria University of Applied Sciences, Hagenberg Campus, degree program Bioinformatics		
		2005	summer	2 groups

SUPERVISION OF THESES

- Textual and Graphical Multi-View Modeling of Critical Situation Types (Bachelor thesis) — 10/2010 - 06/2011 — Ralph Mayr
- Profiling Users in Social Networks (Master thesis) — 10/2011 - 06/2012 — Martin Fleck
- Information Extraction from Social Web Sites (Master thesis) — 10/2011 – 06/2012 — Matthias Popp
- Floating Car Data (Bachelor thesis) — 10/2011- 3/2012 — Harald Weiner/Markus Niederkofler
- Action planning within the scope of the CSI project (Bachelor thesis) — 10/2011- 3/2012 — Gerald Madlsperger
- Ereignisvorhersage im Verkehrsmanagement (Master thesis) — 10/2011- 8/2012 — Christoph Hubl
- Conceptualization, Software Design, and Automated Testing of an Eclipse-based Modeling Environment for Hybrid Systems (Master thesis) — 10/2012 – 06/2013 — Ralph Mayr
- Formal Verification of Collision Avoidance for Controllers of Robotic Ground Vehicles (Bachelor thesis) — 5/2014- 8/2014 — David Vogelbacher

▪ Component-based CPS Verification: A Recipe for Reusability (PhD thesis)	10/2011-present	Andreas Müller

SUPERVISION OF COURSE PROJECTS

▪ Simulation of Hybrid Programs in Mathematica	10/2012 - 06/2013	Il Suk Lyu

AWARDS AND COMMUNITY SERVICE

- ▪ MARIE CURIE INTERNATIONAL OUTGOING FELLOWSHIP 2013
- ▪ APPRECIATION AWARD (AUSTRIAN FEDERAL MINISTER OF SCIENCE AND RESEARCH) 2012
- ▪ PROMOTIO SUB AUSPICIIS PRAESIDENTIS REI PUBLICAE 2012
- ▪ MARSHALL PLAN SCHOLARSHIP 2011: Carnegie Mellon University
- ▪ BEST ACADEMIC TEACHER AWARD (2008/09), 2nd Place, Upper Austria University of Applied Sciences, Hagenberg Campus (degree program Bioinformatics)
- ▪ JOURNAL REVIEWS:
    - o Science of Computer Programming
    - o Embedded Systems Letters
    - o Robotics and Autonomous Systems
    - o Systems and Software
    - o Transactions on Automatic Control
    - o Transactions on Cyber-physical Systems
- ▪ CONFERENCE REVIEWS:
    - o 2018 American Control Conference (ACC 2018)
    - o International Conference on Intelligent Robots (IROS 2017)
    - o 2017 Workshop on Applied Verification for Continuous and Hybrid Systems (ARCH 2017)
    - o 13th International Symposium on Automated Technology for Verification and Analysis (ATVA 2015)
    - o International Conference on Robotics and Automation (ICRA 2014, 2015)
    - o 6th International NASA Formal Methods Symposium (NFM 2014)
    - o 40th International Colloquium on Automata, Languages and Programming (ICALP 2013)
    - o 4th Analytic Virtual Integration of Cyber-Physical Systems Workshop (AVICPS 2013)
    - o International Conference on Information Technology: New Generations (ITNG)
- ▪ PROPOSAL PANELS:
    - o NSF SAS 2017
    - o NSF Cyberphysical Systems 2014
- ▪ PROGRAM COMMITTEE:
    - o 2nd Workshop on Safe Control of Connected & Autonomous Vehicles (SCAV 2018)
    - o 13th International Conference on integrated Formal Methods (iFM 2017)
    - o 3rd Workshop on Formal-IDE (F-IDE 2016)
    - o 2nd Workshop on Formal-IDE (F-IDE 2015)

AFOSR (SYSTEM SCIENTIST)	2/2017-present	Research project sponsored by AFOSR on provably secure cyber-physical systems RESEARCH FOCUS: • Safety in adversarial settings, attacks with physical consequences • Develop uniform substitution calculus of hybrid games
PROOF-AWARECPS (PI)	8/2015-present	Research project sponsored by Austrian Science Fund for component-based, incremental development and verification of cyber-physical systems [FWF P28187-N31] RESEARCH FOCUS: • Component-based development of hybrid system models and proofs • Refactoring and refinement of hybrid system models and proofs • Code synthesis and runtime verification
PTC (SYSTEM SCIENTIST)	2/2017-12/2017	Research project on train control and safety of braking maneuvers. RESEARCH FOCUS: • Models and proofs of train braking maneuvers • Verified runtime model validation and its application to testing
SPHINX (PI)	2/2014-1/2015 5/2015-4/2016	ERC Marie Curie International Outgoing Fellowship [PIOF-GA-2012-328378-Sphinx] RESEARCH FOCUS: • Refactoring and refinement of hybrid system models and proofs • Model-driven development environment for cyber-physical systems
LFCPS (POSTDOCTORAL FELLOW)	2/2015-4/2015	Logical Foundations of cyber-physical systems [NSF CNS-1054246] RESEARCH FOCUS: • Hybrid system theorem proving (KeYmaera X)
HACMS (POSTDOCTORAL FELLOW)	11/2012-1/2014 5/2016-1/2017	DARPA-funded research project for the construction of high-assurance cyber-physical systems [DARPA HACMS AFRL FA8750-12-2-0291] RESEARCH FOCUS: • Provably safe collision avoidance for autonomous robotic ground vehicles • Hybrid system runtime verification • Hybrid system theorem proving
GOALI ArchCPS (COLLABORATION)	11/2012-4/2015	Collaboration on architectural considerations in formal verification techniques for cyber-physical systems [NSF CNS-1035800] RESEARCH FOCUS: • Architecture and modeling of cyber-physical systems
UTC T-SET (COLLABORATION)	11/2012-4/2015	Collaboration on modeling and verification techniques for smart transportation systems (vehicle-to-infrastructure communication, autonomous ground vehicles) RESEARCH FOCUS: • Formal verification of smart transportation systems
CSI (TECHNICAL PROJECT LEAD)	10/2011–1/2014	FIT-IT Semantic Systems funded research project aiming at collaborative situation awareness for multi-modal traffic management [FFG FIT-IT 829598], http://www.situation-awareness.net RESEARCH FOCUS: ▪ Collaborative situation awareness with a focus on qualitative traffic models and situation projection
PROFLOW (CONSULTANT WORKFLOW PROJECTION)	1/2011–12/2012	Research project funded by FFG Basisprogramm. Detection of and adaptation to critical situations that arise during the execution of multiple parallel workflows. RESEARCH FOCUS: ▪ Semantic and situation-aware workflow adaptation
THEHIDDENU (TECHNICAL PROJECT LEAD)	9/2010–12/2012	FIT-IT Semantic Systems funded research project aiming at collaborative situation awareness for multi-modal traffic management [FFG FIT-IT 825070], http://www.social-nexus.net RESEARCH FOCUS:

		▪ Social content integration and profiling with semantic technology
BEAWARE! (PHD CANDIDATE)	04/2009–03/2011	FIT-IT Semantic Systems funded research project aiming at situation awareness for road traffic management [FFG FIT-IT 819577], http://www.situation-awareness.net
		RESEARCH FOCUS: ▪ Situation awareness with a focus on situation projection using Colored Petri nets, development of a situation awareness prototype back-end (Lisp, Prolog, OWL)
TELE-HOMECARE (RESEARCH ASSOCIATE)	01/2008–03/2009	Research project on improving the habitability of elderly persons by assisting them in living autonomously; funded by Upper Austria state government, "Basisfinanzierung"
		RESEARCH FOCUS: ▪ Evaluation of pervasive healthcare approaches, development of wireless-sensor-network-based signal processing components (nesC, Java JCreate, Java SE), development of a platform-independent modeling tool for pervasive healthcare applications (Eclipse Modeling)
PLANT SAFETY SYSTEM (RESEARCH ASSOCIATE)	03/2007–12/2007	K-Plus funded research project on personnel and asset tracking during incidents in industrial environments http://forte.fh-hagenberg.at/project-homepages/pss
		RESEARCH FOCUS: ▪ Positioning systems in industrial environments based on wireless sensor networks (nesc, TinyOS)
GULLIVER (RESEARCH ASSOCIATE)	09/2005–09/2007	FHplus funded research project on supporting Austrian broadcasting editors with multi-modal user interfaces http://forte.fh-hagenberg.at/project-homepages/gulliver/index.shtml
		RESEARCH FOCUS: ▪ Speech recognition on mobile devices, multi-modal user interface components, speech-based article search system (MS Speech Server)
MOSES (RESEARCH ASSOCIATE)	08/2004–08/2005	FHplus funded research project on increasing safety of maintenance personnel with a ubiquitous maintenance tracking system.
		RESEARCH FOCUS: ▪ Ubiquitous plant component identification, industrial maintenance enforcement (planning, guidance, and progress tracking)

PUBLICATION RECORD

BOOK CHAPTERS

[1] Werner Kurschl, Stefan Mitsch, and Johannes Schönböck. *Model-Driven Prototyping Support for Pervasive Healthcare Applications, in Pervasive and Smart Technologies for Healthcare*, IGI Global, 2010.

[2] Wolfgang Beer, Bernhard Moser, Werner Kurschl, Stefan Mitsch, Florian Matusek, and Stephan Sutor. *Application Development and Management of Smart Camera Networks*, in Smart Cameras. SPRINGER, 2009.

JOURNAL PUBLICATIONS (PUBLISHED)

[3] Stefan Mitsch, Khalil Ghorbal, David Vogelbacher, and André Platzer. Formal verification of obstacle avoidance and navigation of ground robots. International Journal of Robotics Research, 36(12), pp. 1312-1340. 2017.

[4] Franz Franchetti, Tze Meng Low, Stefan Mitsch, Juan Paolo Mendoza, Liangyan Gui, Amarin Phaosawasdi, David Padua, Soummya Kar, JoséM. F. Moura, Mike Franusich, Jeremy Johnson, André Platzer and Manuela Veloso. *High-Assurance SPIRAL: End-to-end guarantees for robot and car control*. IEEE Control Systems Magazine, 2017.

[5] Jean-Baptiste Jeannin, Khalil Ghorbal, Yanni Kouskoulas, Aurora Schmidt, Ryan Gardner, Stefan Mitsch, and André Platzer. *A formally verified hybrid system for safe advisories in the next-generation airborne collision avoidance system*. STTT, 2016. Special issue for selected papers from TACAS'15.

[6] Stefan Mitsch, André Platzer. *ModelPlex: Verified runtime validation of verified cyber-physical system models*. FORMAL METHODS IN SYSTEM DESIGN, 49(1), pp. 33-74. 2016. Special issue for selected papers from RV'14. Originally published at RV'14 and as tech report CMU-CS-14-121.

[7]   Stefan Mitsch, André Platzer, Werner Retschitzegger, and Wieland Schwinger. *Logic-Based Modeling Approaches for Qualitative and Hybrid Reasoning in Dynamic Spatial Systems*. ACM COMPUTING SURVEYS, 2015.

[8]   Jan-David Quesel, Stefan Mitsch, Sarah Loos, Nikos Aréchiga, and André Platzer. *How to model and prove hybrid systems with KeYmaera: A tutorial on safety*. INTERNATIONAL JOURNAL ON SOFTWARE TOOLS FOR TECHNOLOGY TRANSFER, Springer, 2015.

[9]   Norbert Baumgartner, Stefan Mitsch, Andreas Müller, Werner Retschitzegger, Andrea Salfinger, and Wieland Schwinger. *A Tour of BeAware! A Situation-Awareness Framework for Control Centers*. JOURNAL OF INFORMATION FUSION, Elsevier. 20:155–173, November, 2014.

[10]   Stefan Mitsch, Grant Olney Passmore, and André Platzer. *Collaborative Verification-Driven Engineering of Hybrid Systems*. JOURNAL OF MATHEMATICS IN COMPUTER SCIENCE. 8(1), March, 2014.

[11]   Norbert Baumgartner, Wolfgang Gottesheim, Stefan Mitsch, Werner Retschitzegger, and Wieland Schwinger. *BeAware!— Situation Awareness, the Ontology-Driven Way*. INTERNATIONAL JOURNAL OF DATA AND KNOWLEDGE ENGINEERING, ELSEVIER, 69(11), November 2010.

CONFERENCE PUBLICATIONS (REFEREED)

[12]   Stefan Mitsch, Marco Gario, Christof J. Budnik, Michael Golm and André Platzer. Formal verification of train control with air pressure brakes. In Alessandro Fantechi, Thierry Lecomte and Alexander Romanovsky, editors, RSSRail 2017: Reliability, Safety, and Security of Railway Systems, volume 10598 of LNCS, pp. 173-191. Springer, 2017.

[13]   Nathan Fulton, Stefan Mitsch, Brandon Bohrer and André Platzer. Bellerophon: Tactical theorem proving for hybrid systems. In Mauricio Ayala-Rincón and César A. Muñoz, editors, Interactive Theorem Proving, International Conference, ITP 2017, volume 10499 of LNCS, pp. 207-224. Springer, 2017.

[14]   Andreas Müller, Stefan Mitsch, Werner Retschitzegger, Wieland Schwinger, and André Platzer. *Change and delay contracts for hybrid system component verification*. In Fundamental Approaches to Software Engineering - 20th International Conference (FASE). Springer, Uppsala, Sweden, April, 2017.

[15]   Stefan Mitsch and André Platzer. *The KeYmaera X proof IDE: Concepts on usability in hybrid systems theorem proving*. In Catherine Dubois, Paolo Masci and Dominique Méry, editors, 3rd Workshop on Formal Integrated Development Environment F-IDE 2016, volume 240 of EPTCS, pp. 67-81, 2016.

[16]   Andreas Müller, Stefan Mitsch, Werner Retschitzegger, Wieland Schwinger, and André Platzer. *A component-based approach to hybrid systems safety verification*. In Integrated Formal Methods - 12th International Conference, IFM 2016, Reykjavik, Iceland, June 1-4, 2016, Proceedings, volume 9681 of LNCS, pp. 441-456. Springer, 2016. Extended version as tech report CMU-CS-16-100.

[17]   Andreas Müller, Stefan Mitsch, André Platzer. *Verified Traffic Networks: Component-based Verification of Cyber-Physical Flow Systems*. In Proceedings of the 18th IEEE International Conference on Intelligent Transportation Systems (ITSC). IEEE, Gran Canaria, Spain, September, 2015.

[18]   Nathan Fulton, Stefan Mitsch, Jan-David Quesel, Marcus Völp, and André Platzer. *KeYmaera X – An Axiomatic Tactical Theorem Prover for Hybrid Systems*. In Proceedings of the 25th International Conference on Automated Deduction (CADE). Springer, Berlin, Germany, August, 2015.

[19]   Stefan Mitsch, Jan-David Quesel, and André Platzer. *Refactoring, Refinement, and Reasoning - A Logical Characterization for Hybrid Systems*. In Proceedings of the 19th International Symposium on Formal Methods (FM). Springer, Singapore, May, 2014.

[20]   Andrea Salfinger, Daniel Neidhart, Werner Retschitzegger, Wieland Schwinger, and Stefan Mitsch. *SEM² Suite — Towards a Tool Suite for Supporting Knowledge Management in Situation Awareness Systems*. In 15th IEEE International Conference on Information Reuse and Integration (IRI) . San Francisco, CA, USA, August, 2014.

[21]   Stefan Mitsch, Jan-David Quesel, and André Platzer. *From Safety to Guilty and from Liveness to Niceness*. In Proceedings of the 5th Workshop on Formal Methods for Robotics and Automation. Berkeley, CA, USA, July, 2014.

[22]   Andreas Müller, Stefan Mitsch, Werner Retschitzegger, and Wieland Schwinger. *A Conceptual Reference Model of Modeling and Verification Concepts for Hybrid Systems*. In Proceedings of the 7th International Conference on Knowledge Science, Engineering and Management. Springer, Sibiu, Romania, October, 2014.

[23]   Stefan Mitsch, Khalil Ghorbal, and André Platzer. *On Provably Safe Obstacle Avoidance for Autonomous Robotic Ground Vehicles*. In Proceedings of the International Conference on Robotics, Science and Systems (RSS), Berlin, Germany, June 2013.

[24]   Stefan Mitsch, Grant Olney Passmore, and André Platzer. *A Vision of Collaborative Verification-Driven Engineering of Hybrid Systems*. In Proceedings of the Workshop on Enabling Domain Experts to Use Formalized Reasoning (Do-Form@AISB), AISB, Exeter, UK, April 2013.

[25]   Stefan Mitsch, Andreas Müller, Werner Retschitzegger, Andrea Salfinger, and Wieland Schwinger. *A Survey on Clustering Techniques for Situation Awareness*. In Proceedings of the 15th Asia-Pacific Web Conference (APWeb), Springer, Sydney, Australia, April 2013.

[26]   Birgit Pröll, Werner Retschitzegger, Wieland Schwinger, Elisabeth Kapsammer, Stefan Mitsch, Norbert Baumgartner, Gustavo Rossi, Gerald Czech, and Jürgen Högl. *crowdSA - Crowdsourced Situation Awareness for Crisis Management*. In Proceedings of Social Media and Semantic Technologies in Emergency Response (SMERST). Coventy, UK, April 2013.

[27]   Martin Wischenbart, Stefan Mitsch, Elisabeth Kapsammer, Angelika Kusel, Stephan Lechner, Birgit Pröll, Werner Retschitzegger, Johannes Schönböck, Wieland Schwinger, and Manuel Wimmer . *Automatic data transformation: breaching the walled gardens of social network platforms*. In Proceedings of the Ninth Asia-Pacific Conference on Conceptual Modelling (APCCM). Australian Computer Society, Adelaide, Australia, January 2013.

[28] Stefan Mitsch, Sarah M. Loos, and André Platzer. *Towards Formal Verification of Freeway Traffic Control*. In Proceedings of the 3rd International Conference on Cyber-Physical Systems (ICCPS), ACM/IEEE, Beijing, China, April 2012.

[29] Elisabeth Kapsammer, Angelika Kusel, Stefan Mitsch, Birgit Pröll, Werner Retschitzegger, Wieland Schwinger, Johannes Schönböck, Manuell Wimmer, and Martin Wischenbart. *User Profile Integration Made Easy – Model-Driven Extraction and Transformation of Social Network Schemas*, International Workshop on Interoperability of User Profiles in Multi-Application Web Environments (MultiA-Pro@WWW), ACM, Lyon, France, April 2012.

[30] Angelika Kusel, Stefan Mitsch, Werner Retschitzegger, Wieland Schwinger, Ralph Mayr, and Johannes Schönböck. *Ontology-Driven Generation of Multi-View Modeling Tools*, 11th International Conference on Software Engineering, IASTED, Crete, Greece, June 2012.

[31] Norbert Baumgartner, Stefan Mitsch, Andreas Müller, Werner Retschitzegger, Andrea Salfinger, and Wieland Schwinger. *The Situation Radar – Visualizing Collaborative Situation Awareness in Traffic Control Systems*, ITS World Congress, 2012.

[32] Werner Retschitzegger, Wieland Schwinger, Stefan Mitsch, Wolfgang Gottesheim, Birgit Pröll, Gustavo Rossi, Norbert Baumgartner, and Robert Hutter. *Making Workflows Situation Aware – An Ontology-Driven Framework for Dynamic Spatial Systems*, In Proceedings of the 13th International Conference on Information Integration and Web-based Applications & Services (iiWAS), ACM, Ho Chi Minh City, Vietnam, December 2011.

[33] Stefan Mitsch, Werner Retschitzegger, and Wieland Schwinger. *Towards Modeling Dynamic Behavior with Integrated Qualitative Spatial Relations*. In Proceedings of the 5th Workshop on Semantic and Conceptual Issues in GIS (SeCoGIS), in conjunction with ER, SPRINGER, Brussels, Belgium, November 2011.

[34] Elisabeth Kapsammer, Stephan Lechner, Stefan Mitsch, Birgit Pröll, Werner Retschitzegger, Wieland Schwinger, Manuel Wimmer, and Martin Wischenbart. *Towards a Reference Model for Social User Profiles: Concept & Implementation*. Proceedings of the International Workshop on Personalized Access, Profile Management, and Context Awareness in Databases, in conjunction with VLDB, Seattle, WA, USA, September 2011.

[35] Elisabeth Kapsammer, Stefan Mitsch, Birgit Pröll, Wieland Schwinger, Manuel Wimmer, and Martin Wischenbart. *A First Step Towards a Conceptual Reference Model for Comparing Social User Profiles*. In Proceedings of the International Workshop on User Profile Data on the Social Semantic Web, Heraklion, Greece, June 2011.

[36] Norbert Baumgartner, Wolfgang Gottesheim, Stefan Mitsch, Werner Retschitzegger, and Wieland Schwinger. *SemGen— Towards a Semantic Data Generator for Benchmarking Duplicate Detectors*. In Proceedings of the 4th International Workshop on Data Quality in Integration Systems, in conjunction with DASFAA, SPRINGER, Hong Kong, April 2011.

[37] Wolfgang Gottesheim, Stefan Mitsch, Werner Retschitzegger, Wieland Schwinger, and Norbert Baumgartner. *WorkAware—Situation-Aware Workflow Management*. In Proceedings of the International Conference on Knowledge Management and Information Sharing (KSIM), SPRINGER, Valencia, Spain, October 2010.

[38] Norbert Baumgartner, Wolfgang Gottesheim, Stefan Mitsch, Werner Retschitzegger, and Wieland Schwinger. *Towards duplicate detection for situation awareness based on spatio-temporal relations*. In Proceedings of the 9th International Conference on Ontologies, DataBases and Applications of Semantics (ODBASE), SPRINGER, Hersonissou, Crete, Greece, October 2010.

[39] Norbert Baumgartner, Wolfgang Gottesheim, Stefan Mitsch, Werner Retschitzegger, and Wieland Schwinger. *Improving situation awareness*. In Proceedings of the 8th International Workshop on Quality in Databases (QDB/VLDB), ACM, Singapore, September 2010.

[40] Norbert Baumgartner, Wolfgang Gottesheim, Stefan Mitsch, Werner Retschitzegger, and Wieland Schwinger. *Situation prediction nets—playing the token game for ontology-driven situation awareness*. In Proceedings of the 29th International Conference on Conceptual Modeling (ER), SPRINGER, Vancouver, Canada, November 2010.

[41] Norbert Baumgartner, Wolfgang Gottesheim, Stefan Mitsch, Werner Retschitzegger, and Wieland Schwinger. *On optimization of predictions in ontology-driven situation awareness*. In Proceedings of the 3rd International Conference on Knowledge, Science, Engineering and Management (KSEM), SPRINGER, Vienna, Austria, November, 2009.

[42] Norbert Baumgartner, Wolfgang Gottesheim, Stefan Mitsch, Werner Retschitzegger, and Wieland Schwinger. *"Same, Same but Different"—A Survey on Duplicate Detection Methods for Situation Awareness*. In Proceedings of the 8th International Conference on Ontologies, DataBases and Applications of Semantics (ODBASE), SPRINGER, Vilamoura, Portugal, November, 2009.

[43] Werner Kurschl, Stefan Mitsch, and Johannes Schönböck. *An Evaluation Framework for Pervasive Healthcare Applications*. In Proceedings of the 4th International Conference on Broadband Communications, Information Technology, and Biomedical Applications (BROADCOM), IEEE, Wroclaw, Poland, July 2009.

[44] Werner Kurschl, Stefan Mitsch, and Johannes Schönböck. *Modeling Distributed Signal Processing Applications*. In Proceedings of the 6th International Workshop on Wearable and Implantable Body Sensor Networks (BSN), Berkeley, CA, USA, June 2009.

[45] Werner Kurschl, Stefan Mitsch, and Johannes Schönböck. *Modeling Situation-Aware Ambient Assisted Living Systems for Eldercare*. In Proceedings of the 6th International Conference on Information Technology: New Generations (ITNG), CPS Publishing, Las Vegas, NV, USA, April 2009.

[46] Werner Kurschl, Stefan Mitsch, and Johannes Schönböck. *Model-Driven Prototyping Support for Pervasive Health Care Applications*. In Proceedings of the IASTED International Symposium on Distributed Sensor Networks (DSN), ACTA Press, Orlando, FL, USA, November 2008.

[47] Werner Kurschl, Stefan Mitsch, Johannes Schönböck, and Wolfgang Beer. *Modeling Wireless Sensor Networks Based Context-Aware Emergency Coordination Systems*. In Proceedings of the 6th International Conference on Advances in Mobile Computing & Multimedia (MoMM), ACM, Linz, Austria, November 2008.

[48] Werner Kurschl, Stefan Mitsch, and Johannes Schönböck. *An Engineering Toolbox to Build Situation Aware Ambient Assisted Living Systems*. In Proceedings of the 3rd International Conference on Broadband Communications, Information Technology & Biomedical Applications (BROADCOM), IEEE, Pretoria, South Africa, November 2008.

[49] Werner Kurschl, Stefan Mitsch, Johannes Schönböck, Wolfgang Beer, Wolfgang Gottesheim, and Rene Prokop. *Towards a Unified Location Tracking System for Heterogeneous Industrial Environments*. In Proceedings of the 6th International Conference on Industrial Informatics (INDIN), IEEE, Daejon, Korea, July 2008.

[50] Werner Kurschl, Wolfgang Gottesheim, Stefan Mitsch, Rene Prokop, Johannes Schönböck, and Wolfgang Beer. *Large-Scale Industrial Positioning and Location Tracking—Are we There Yet?* In Proceedings of the 7th International Conference on Mobile Business (ICMB), IEEE, Barcelona, Spain, July 2008.

[51] Werner Kurschl, Wolfgang Gottesheim, Stefan Mitsch, Rene Prokop, and Wolfgang Beer. *A Two Layered Deployment Scheme for Wireless Sensor Network Based Location Tracking*. In Proceedings of the 5th International Conference on Information Technology: New Generations (ITNG), CPS Publishing, Las Vegas, NV, USA, April 2008.

[52] Werner Kurschl, Wolfgang Gottesheim, Stefan Mitsch, Rene Prokop, and Johannes Schönböck. *Evaluation of a Mobile Multimodal Application Design—Major Usability Criteria and Usability Test Results*. In Proceedings of the 6th International Conference on Mobile Business (ICMB), IEEE, Toronto, Canada, July 2007.

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TALKS AND TUTORIALS

[1] Stefan Mitsch. *Hybrid Systems Verification and Verified Runtime Validation with KeYmaera X*, Talk at Princeton University, Princeton, NJ, November 2016.

[2] Stefan Mitsch. *Hybrid Systems Verification – Verified Runtime Validation and its Application to Test Design*, Keynote at Siemens Test Engineering Conference 2016, Princeton, NJ, November 2016.

[3] Stefan Mitsch, Nathan Fulton, and André Platzer. *KeYmaera X – Tactics and Proofs for Cyber-Physical Systems*. Tutorial at FM 2016, Limassol, Cyprus, November 2016.

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[5] Stefan Mitsch. *KeYmaera X: Tactics and Proof-by-Pointing*, Talk at 15th KeY Symposium, Manigod, France, July 2016.

[6] Nathan Fulton, Stefan Mitsch, and André Platzer. *From Idea to Provably Safe Implementation – Modeling, Proving, Simulation, and Synthesis in KeYmaera X*. Tutorial at CPSWeek 2016, Vienna, Austria, April 2016.

[7] Stefan Mitsch. *Verified Runtime Validation and Proof-Aware Refactoring for Hybrid Systems*. Talk at 14th KeY Symposium, Gothenburg, July 2015.

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[9] Stefan Mitsch. *Hybrid Systems Engineering – Verified Runtime Validation and Proof-Aware Refactoring*, Talk at McMaster University, Hamilton, ON, Canada, September 2014.

PATENTS AND INVENTION DISCLOSURES

[1] Verified Runtime Validation of Verified Cyber-Physical System Models (Pending, PCT/US14/60019)

[2] KeYmaera X Kernel – Hybrid System Theorem Prover Core

SOFTWARE ARTIFACTS

[3] KeYmaera X Hybrid Systems Theorem Prover (http:// keymaerax.org)

[4] Sphinx Eclipse Modeling Toolkit for Hybrid Systems Models (http://www.cs.cmu.edu/~smitsch/tools.html#sphinx)