CV of Gera Weiss

Ben-Gurion University of the Negev
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Research Interests

Theories and tools for high-level modeling, design, and analysis of embedded software. Behavioral and Scenario based approaches to software engineering. Hybrid Systems (discrete + continuous), Formal Methods, Control Theory.

Education

Ph.D. in Applied Mathematics and Computer Science (2006)
The Weizmann Institute of Science
Thesis: "State Nullification by Output Feedback"
Advisors: Prof. Zvi Artstein and Prof. Amir Pnueli

M.Sc. in Applied Mathematics (2001)
The Weizmann Institute of Science
Thesis: "Stabilization via Dynamic Output Feedback"
Advisor: Prof. Zvi Artstein

B.Sc. in Mathematics and Computer Science (1996-1998)
Bar-Ilan University

Honors and Awards

The 2002 Feinberg Graduate School Prize for M.Sc. Students

The Israeli Parliament (Knesset) certificate of appreciation for excellent students, 2003

Feinberg Graduate School Deans List of Honor for 2005

The 2006 Feinberg Graduate School Prize for Ph.D. Graduates

The 2010 Allon Fellowships for Outstanding Young Researchers

EU International Reintegration Grants (IRG) for years 2010-2014

Teaching Award 2012

Israel Science Foundation (ISF) for years 2012-2016

Research and Professional Experience

Assistant Professor — 2009–
Ben-Gurion University of the Negev — Beer-Sheva,Israel
Faculty member at the Computer Science Department.

Postdoctoral Fellow — 2006–2009
University of Pennsylvania — Philadelphia, USA
Usage of formal languages as interfaces for specifying resources needed to guarantee performance of control software. With Prof. Rajeev Alur's group.

Research Assistant 1999–2006
The Weizmann Institute of Science Rehovot, Israel
With Prof. Zvi Artstein: stabilization and nullification of sampled and discrete-time control systems by output feedback. With Prof. Amir Pnueli: modeling and analysis of timed systems (part of the AMETIST project). With Prof. David Harel's group: use of Live Sequence Charts (LSCs) for control.

Consultant 1995–1999 (Part Time)
Liacom Systems Ltd. Holon, Israel
Information security: design and implementation of security schemes and mechanisms for protecting electronic data. Network Management Systems (NMS): consulting and development of software to monitor and administer networks of configurable agents. Embedded software: consulting and development of software for embedded and real-time applications.

Army Service 1989–1995
Israel Defense Force Israel

Journal Publications

1. Non-Intrusive Repair of Safety Violations in Reactive Programs, TCCI. To Appear. With David Harel, Guy Katz, and Assaf Marron.
2. Behavioral Programming, Communications of the ACM, Vol. 55 No. 7, Pages 90-100. With David Harel and Assaf Marron.
3. Compositional Modeling and Analysis of Multi-Hop Control Networks, IEEE Transactions of Automatic Control, 2011, With R. Alur, A. D'Innocenzo, K. H. Johansson, and G. J. Pappas.
4. Memoryless Output Feedback Nullification and Canonical Forms, for Time Varying Systems. *Internat. J. Control*, 78(15):1174–1181, 2005.
5. Preservation of Controllability of Single-Input Time-Varying Linear Systems Under Sampling. *IEEE Trans. Automat. Control*, 50(12):2094–2096, 2005.
6. State Nullification by Memoryless Output Feedback. *Math. Control Signals Systems*, 17(1):38–56, 2005. With Zvi Artstein.

Conference Publications

1. A Decentralized Approach for Programming Interactive Applications with JavaScript and Blockly. AGERE! held at ACM SIGPLAN SPLASH 2012. With Assaf Marron Guy Wiener.
2. Non-intrusive Repair of Reactive Programs. ICECCS 2012. With David Harel, Guy Katz, and Assaf Marron.
3. A Software Engineering Framework for Switched Fuzzy Systems. FUZZ-IEEE 2012. With David Harel, Assaf Marron, and Amir Nissim.

4. Behavioral programming, decentralized control, and multiple time scales. AGERE! AGERE! held at ACM SIGPLAN SPLASH 2012. With David Harel, Assaf Marron, and Guy Wiener.
5. Model-Checking Behavioral Programs. ACM SIGBED EMSOFT 2011. With David Harel, Robby Lampert, and Assaf Marron.
6. On Visualization and Comprehension of Scenario-Based Programs, 19th IEEE International Conference on Program Comprehension (ICPC 2011). With Nir Eitan, Michal Gordon, David Harel, and Assaf Marron
7. Coordinating and Visualizing Independent Behaviors in Erlang *,9th ACM SIGPLAN Erlang Workshop* 2010. With Guy Wiener and Assaf Marron.
8. Programming Coordinated Scenarios in Java*, 24th ACM SIGPLAN ECOOP*, 2010. With David Harel, and Assaf Marron.
9. Scalable Scheduling Algorithms for Wireless Networked control Systems., *5th IEEE Conference on Automation Science and Engineering, CASE* 2009. With Rajeev Alur, Alessandro D'Innocenzo, Alf Isaksson, Karl Johansson, and George Pappas.
10. Robust Stability of Multi-Hop Control Networks., *48th IEEE Conference on Decision and Control, CDC* 2009. With Rajeev Alur, Alessandro D'Innocenzo, Karl Johansson, and George Pappas.
11. Modeling and Analysis of Multi-Hop Control Networks., *15th IEEE Real-Time and Embedded Technology and Applications Symposium, RTAS* 2009. With Rajeev Alur, Alessandro D'Innocenzo, Karl Johansson, and George Pappas.
12. On Omega-Languages Defined by Mean-Payoff Conditions., *Foundations of Software Science and Computational Structures, 12th International Conference, FoSSaCS* 2009. With Rajeev Alur, Aldric Degorre and Oded Maler.
13. Specification and Analysis of Network Resource Requirements of Control Systems., *Hybrid Systems: Computation and Control, 12th International Workshop, HSCC* 2009. With Sebastian Fischmeister, Madhukar Anand and Rajeev Alur.
14. RTComposer: A Framework for Real-Time Components with Scheduling Interfaces., In *8th International Conference on Embedded Software, ACM SIGBED EMSOFT* 2008. With Rajeev Alur.
15. Ranking Automata and Games for Prioritized Requirements., In *20th International Conference on Computer Aided Verification, CAV* 2008. With Rajeev Alur and Aditya Kanade.
16. Regular Specifications of Resource Requirements for Embedded Control Software., In *14th IEEE Real-Time and Embedded Technology and Applications Symposium, RTAS* 2008. With Rajeev Alur.
17. Automata Based Interfaces for Control and Scheduling. In *Hybrid Systems: Computation and Control, 10th International Workshop, HSCC* 2007. With Rajeev Alur.

18. A Combinatorial Game Approach to State Nullification by Hybrid Feedback. In *46th IEEE Conference on Decision and Control, CDC* 2007.
19. State Nullification of Switched Systems by Linear Output Feedback. In *Hybrid Systems: Computation and Control, 10th International Workshop, HSCC* 2007.
20. Some Methodological Observations Resulting From Experience Using LSCs and the Play-in/Play-out Approach. In *Scenarios: Models, Transformations and Tools*, 2003. With David Harel and Hillel Kugler.

Other Publications

1. Optimal Scheduler for a Memory Card. Technical report, IST-2001-35304 AMETIST Project, 2002.
2. Planning a Production Line with LSCs. Technical report, IST-2001-33522 OMEGA Project, 2004. With Hillel Kugler.

Teaching

Formal Verification Methods (`http://www.cs.bgu.ac.il/~fvm121`)

Hybrid Systems (`http://www.cs.bgu.ac.il/~hs121`)

Object Oriented Programming (`http://www.cs.bgu.ac.il/~oosd112`)

Final Project in Software Engineering (`http://hl2.bgu.ac.il/`)

Students

Moshe Weinstock, Michael Bar-Sinai, Amir Menczel, Merav Bukra, Hanoch Efraim, Adiel Asherov, Igor Mishinsky, Lior Mizrahi, Liat Cohen

Supervised 7 past final student projects. Currently supervising 6 active projects.

Professional Service

The 13th International Conference on Hybrid Systems: Computation and Control. At Stockholm, Sweden as part of CPSWeek. Program committee member.

Second International Workshop on Numerical Abstractions for Software Verification (2009). At San-Francisco as part of CPSWeek. Program committee member.

The fourth Northeastern verification seminar (2007). At the University of Pennsylvania. Organizing committee.

The annual Israeli meeting of graduate students in control (2006). At the Weizmann Institute of Science. Organizing committee.

Reviewer for: IEEE Transactions of Automatic Control, Real-Time Systems Symposium, Real-Time and Embedded Technology and Applications Symposium, Conference on Hybrid Systems: Computation and Control, Conference on Embedded Software, Conference on Decision and Control, European Control Conference,Symposium on Theoretical Aspects of Computer Science, Conference on Concurrency Theory, IEEE Transactions on Industrial Informatics.