

Curriculum Vitae

Hossein Hojjat

Assistant Professor
Department of Computer Science
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Research Interests

- Formal Methods, Software Verification, Analysis and Synthesis, Automated Reasoning

Work Experience Summary

- **University of Tehran** Tehran, Iran
Tenure-Track Assistant Professor *Aug. 2018-*
- **Rochester Institute of Technology** Rochester, United States
Tenure-Track Assistant Professor *Aug. 2016 -*
- **Cornell University** Ithaca, United States
Postdoctoral Researcher *Feb. 2014 - Jul. 2016*
 - Under supervision of Prof. Nate Foster
 - NYC ASCENT Fellow
- **EPFL** Lausanne, Switzerland
Postdoctoral Researcher *Sep. 2013 - Dec. 2013*
 - Under supervision of Prof. Joseph Sifakis

Education Background

- **EPFL** Lausanne, Switzerland
PhD Student *Sep. 2008 - Aug. 2013*
 - Ph.D. Dissertation: “Automatic Verification with Abstraction and Theorem Proving”
under supervision of Prof. Viktor Kuncak
 - Member of ProgLab.Net project funded by Microsoft Research

Education (Cont.)

- **University of Tehran** Tehran, Iran
Msc., Software Engineering (Grades: 18.99 / 20) *Sep. 2005 - Nov. 2007*
 - Enrolled as a top student without passing the entrance examinations
 - Thesis title: “Formal verification of the object-based systems using process algebra” under supervision of Prof. Marjan Sirjani and Prof. Mohammad Reza Mousavi
 - Defended with honors (19.8 / 20)
- **University of Tehran** Tehran, Iran
Bs. Software Engineering (Grades 17.69 / 20) *Sep. 2001 - Sep. 2005*
 - Graduated with Honors, second position

Funding Awarded

- SaTC: CORE: Small: Collaborative: A New Approach to Federated Network Security, National Science Foundation. September 2017-August 2020 (\$167,450.00)
- Minseok Kwon, Hossein Hojjat, and Matthew Wright: Real-Time Validation of BGP Route Updates in Programmable Control Planes, SIRA - RIT Center for Computing Security (\$12,960)

Invited Presentations

- Networks and Systems Summer School (August 2018)
- University of Rochester, Department of Computer Science Seminar (July 2017)
- University at Buffalo, Department of Computer Science and Engineering Seminar (May 2017)

Editorial and Review Activities

- Chair
 - FMCAD’16 Student Forum, FSEN’19
- Program Committee Member
 - CSSE’13, FSEN’15,’17 - PC member & Publicity Chair, TTCS’17, VSTTE’17, SEFM’17, SBMF’18, PLDI (AE) 2019
- Guest Editor
 - Science of Computer Programming (Special issue devoted to FSEN’13,FSEN’15)

- Member of the organizing committee
 - FSEN'05, FSEN'07, FSEN'11 and FSEN'13
- Reviewer for the conferences & journals
 - Conference: CADE'17, FCT'17, CONCUR'16, TACAS'16, DISC'15, GandALF'15, FMCAD'15, OOPSLA'15, PLDI'15, SODA'15, SEFM'14, LPAR'13, ACSD'13, VSTTE'12, SAS'11, ESOP'11, FSEN'07
 - Journal: IEEE-ESL (2014), PeerJ CS (2015), IEEE/ACM Transactions on Networking (2017), Science of Computer Programming (2018)
- Proceedings Manager
 - International Conference on Coordination Models and Languages (COORDINATION 2012)
 - Fundamentals of Software Engineering (FSEN 2011, 2013, 2015)

Publications

Conference Papers

- Hossein Hojjat, Philipp Rümmer: “The Eldarica Horn Solver”, Proceedings of the 18th International Conference on Formal Methods in Computer-Aided Design (FMCAD'18)
- Hossein Hojjat, Philipp Rümmer: “Deciding and Interpolating Algebraic Data Types by Reduction”, Proceedings of the 19th International Symposium on Symbolic and Numeric Algorithms for Scientific Computing (SYNASC'17)
- Jedidiah McClurg, Hossein Hojjat, Pavol Cerny: “Synchronization Synthesis for Network Programs”, Proceedings of the 29th International Conference on Computer Aided Verification (CAV'17)
- Shrutarshi Basu, Nate Foster, Hossein Hojjat, Paparao Palacharla, Christian Skalka, Xi Wang: “Life on the Edge: Unraveling Policies into Configurations”, Proceedings of the ACM/IEEE Symposium on Architectures for Networking and Communications Systems (ANCS'17)
- Hossein Hojjat: “The FMCAD 2016 graduate student forum”, Proceedings of the 16th International Conference on Formal Methods in Computer-Aided Design (FMCAD'16)
- Hossein Hojjat, Philipp Rümmer, Jedidiah McClurg, Pavol Cerny, Nate Foster: “Optimizing Horn Solvers for Network Repair”, Proceedings of the 16th International Conference on Formal Methods in Computer-Aided Design (FMCAD'16)
- Jedidiah McClurg, Hossein Hojjat, Nate Foster, Pavol Cerny: “Event-driven Network Programming” , Proceedings of the 37th ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI'16)

- Jedidiah McClurg, Hossein Hojjat, Pavol Černý, Nate Foster: “Efficient Synthesis of Network Updates”, Proceedings of the 36th ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI’15)
- Sudip Roy, Lucja Kot, Gabriel Bender, Bailu Ding, Hossein Hojjat, Christoph Koch, Nate Foster, Johannes Gehrke: “The Homeostasis Protocol: Avoiding Transaction Coordination Through Program Analysis”, Proceedings of the 2015 ACM SIGMOD International Conference on Management of Data (SIGMOD’15)
- Hossein Hojjat, Jedidiah McClurg, Pavol Černý, Nate Foster: “Network Updates for the Impatient: Eliminating Unnecessary Waits”, Proceedings of the First Workshop on Programming Languages and Verification Technology for Networking (PLVNET’15)
- Hossein Hojjat, Philipp Rümmer, Pavle Subotic, Wang Yi: “Horn Clauses for Communicating Timed Systems”, Proceedings of the First Workshop on Horn Clauses for Verification and Synthesis (HCVS’14)
- Philipp Rümmer, Hossein Hojjat, Viktor Kuncak: “Classifying and Solving Horn Clauses for Verification”, Proceedings of the 5th International Conference on Verified Software: Theories, Tools, Experiments (VSTTE’13)
- Philipp Rümmer, Hossein Hojjat, Viktor Kuncak: “Disjunctive Interpolants for Horn-Clause Verification”, Proceedings of the 25th International Conference on Computer Aided Verification (CAV’13)
- Hossein Hojjat, Radu Iosif, Filip Konečný, Viktor Kuncak and Philipp Rümmer: “Accelerating Interpolants”, Proceedings of the 10th International Symposium on Automated Technology for Verification and Analysis (ATVA’12)
- Hossein Hojjat, Filip Konečný, Florent Garnier, Radu Iosif, Viktor Kuncak and Philipp Rümmer: “Verification Toolkit for Numerical Transition Systems (tool paper)”, Proceedings of the 18th International Symposium on Formal Methods (FM’12)
- Bahman Pourvatan, Marjan Sirjani, Hossein Hojjat and Farhad Arbab: “Analysis of Reo Circuits using Symbolic Execution”, Proceedings of the 8th International Workshop on the Foundations of Coordination Languages and Software Architectures (FOCLASA’09)
- Hossein Hojjat, Mohammad Reza Mousavi, Marjan Sirjani: “Process Algebraic Verification of SystemC Codes”, Proceedings of the 8th International Conference on Application of Concurrency to System Design (ACSD’08)
- Hossein Hojjat, Mohammad Reza Mousavi, Marjan Sirjani: “A Framework for Performance Evaluation and Verification in Stochastic Process Algebras”, Proceedings of the 22nd ACM Symposium on Applied Computing, Software Verification Track (SV’08)
- Hossein Hojjat, Marjan Sirjani, Mohammad Reza Mousavi and Jan Friso Groote: “Sarir: A Rebeca to mCRL2 Translator”, Proceedings of the 7th IEEE International Conference on Application of Concurrency to System Design (ACSD’07)

- Fahimeh Raja , Hadi Amiri , Samira Tasharofi, Hossein Hojjat and Farhad Oroumchian: “Evaluation of part of speech tagging on Persian text”, Proceedings of the Second Workshop on Computational Approaches to Arabic Script-based Languages (CAASL2’07)
- Hadi Amiri, Hosein Hojjat, Farhad Oroumchian: “Investigation on a Feasible Corpus For Persian POS Tagging” (in Persian), Proceedings of the 12th International CSI Computer Conference (CSICC’07)
- Hossein Hojjat, Hootan Nakhost, Marjan Sirjani: “Formal Verification of the IEEE 802.1D Spanning Tree Protocol Using Extended Rebeca”, Proceedings of the First IPM International Workshop on Foundations of Software Engineering (FSEN’05)

Journal Papers

- Philipp Rümmer, Hossein Hojjat, Viktor Kuncak: “On recursion-free Horn clauses and Craig interpolation”, *Formal Methods in System Design*, v.47, n. 1, pp. 1-25, 2015.
- Bahman Pourvatan, Marjan Sirjani, Hossein Hojjat and Farhad Arbab: “Symbolic Execution of Reo Circuits using Constraint Automata”, *Science of Computer Programming*, Elsevier, v. 77, n. 7-8, pp. 848-869, 2012.
- Hossein Hojjat, Mohammad Reza Mousavi, Marjan Sirjani: “Formal Analysis of SystemC Designs in Process Algebra”, *Fundamenta Informaticae*, v. 107, n. 1, pp. 19-42, 2011.
- Hossein Hojjat, Hootan Nakhost, Marjan Sirjani: “Integrating Module Checking and Deduction in a Formal Proof for the Perlman Spanning Tree Protocol (STP)”, *J.UCS Journal of Universal Computer Science*, v. 13, n. 13, pp. 2076-2104, 2007.

Technical Reports

- Jedidiah McClurg, Hossein Hojjat, Nate Foster, Pavol Černý: “Specification and Compilation of Event-driven SDN Programs”, *CoRR abs/1507.07049*, 2015.
- Hossein Hojjat, Philipp Rümmer, Pavle Subotic, Wang Yi: “Uniform Analysis for Communicating Timed Systems (Extended Technical Report)”, *EPFL-REPORT-190680*, 2013.
- Hossein Hojjat, Mohammad Reza Mousavi Mousavi, Marjan Sirjani: “Application of process algebraic verification and reduction techniques to SystemC designs”, *Computer Science Report No. 08-15*, Technische Universiteit Eindhoven, 2008.
- Farhad Oroumchian, Samira Tasharofi, Hadi Amiri, Hossein Hojjat, Fahimeh Raja: “Creating a Feasible Corpus for Persian POS Tagging”, *Technical Report Number TR 3/2006*, University of Wollongong in Dubai, 2006.

Management and Leadership

- Attended “Postdoc Leadership Development Program”, Cornell University (2014-2015)
 - <http://postdocs.cornell.edu/professional-development>
- Vice Chair of University of Tehran ACM Student Chapter (2003-2004)
 - <http://acm.ut.ac.ir/acm/flats/officers?lang=en>

National Prizes

- Graduated with Honors (second position in the Computer Engineering), University of Tehran (2005)
- Enrolled in the graduate school as a top student without passing the entrance examinations, University of Tehran (2005)

Software Development

- Eldarica Model Checker

<https://rise4fun.com/Eldarica/>

Courses Taught

Undergraduate

- Programming Languages and Compilers: Fall 2018, Spring 2019, UT.
- Programming Language Concepts (CSCI-344): Fall 2016, RIT.

Graduate

- Compiler Construction (CSCI-742): Spring 2017, Spring 2018, RIT.
- Programming Language Theory (CSCI-740): Fall 2017, RIT.
- Introduction to Formal Methods (with Fatemeh Ghassemi): Fall 2018, UT.
- Software Synthesis: Spring 2019, UT.

Committee Service

- RIT Computer science colloquium committee

References

- Prof. Dr. Nate Foster, Cornell University
- Prof. Dr. Viktor Kuncak, EPFL
- Prof. Dr. Marjan Sirjani, Malardalen University