

MARJAN SIRJANI
Curriculum Vitae

School of Innovation, Design and Engineering
Malardalen University
Västerås, Höskoleplan 1
Västerås, Sweden
Tel: +46 2110 1300
marjan.sirjani@mdh.se
School of Computer Science, Reykjavik University, Iceland
<http://www.ru.is/faculty/marjan/>

Fields of Interest:

Software Engineering, Formal Methods, Model Checking, Component-Based Modeling, Formal Verification, Applying Formal Methods in System Design

Positions and Education:

- Professor, School of Innovation, Design and Engineering, Malardalen University, Västerås, Sweden. (2016 –)
- Professor, School of Computer Science, Reykjavik University, Reykjavik, Iceland. (2013 – 2016), (2016 – now, 20%)
- Assistant and Associate Professor, School of Computer Science, Reykjavik University, Reykjavik, Iceland. (2008 - 2010 – 2013)
- Fulbright Visiting scholar, EECS, University of California at Berkeley, USA, Visiting Prof. Edward Lee (May-August 2015)
- Visiting scholar, Department of Computer Science, University of Illinois at Urbana-Champaign, USA, Visiting Prof. Gul Agha. (Fall 2012)
- Member of Expert Panel on Engineering, Technical Science and Physical Sciences - RANNÍS - The Icelandic Centre for Research. (2011 - 2013, 2015)
- Head of Research and Graduate Studies Council, School of Computer Science, Reykjavik University, Reykjavik, Iceland. (2010 – 2012, 2014-2015)
- Member of Research Council, Reykjavik University, Reykjavik, Iceland. (2011 – 2012)
- Assistant Professor, School of Electrical and Computer Engineering, University of Tehran, Tehran, Iran. (2004 – 2008)

- Head of Software Engineering Department, School of Electrical and Computer Engineering, University of Tehran, Tehran, Iran. (2005-2008)
- Lecturer, School of Electrical and Computer Engineering, University of Tehran, Tehran, Iran. (1998-2004)
- Senior Researcher, School of Computer Science, Institute for Studies in Theoretical Physics and Mathematics (IPM), Tehran, Iran (2004-2008).
- Leader of Formal Methods Lab., School of Electrical and Computer Engineering, University of Tehran, Tehran, Iran. (2004 –)
- PostDoc position at SEN3 department of CWI, Amsterdam, Netherlands, 2003.
- Ph.D. in Computer Engineering, Computer Engineering Department, Sharif University of Technology, Tehran, Iran, 2004, graduated with excellent degree.
Thesis: Formal Specification and Verification of Concurrent and Reactive Systems
- Master of Science in Computer Engineering, Sharif University of Technology, Tehran, Iran, January 1994, graduated among top three in class.
Thesis: Analysis, Design and Implementation of a Dental Expert System
- Bachelor of Science in Computer Engineering, Shahid Beheshti University, Tehran, Iran, May 1989, graduated first in class

Achievements:

- Receiving Sharif University of Technology distinguished alumni award on the occasion of university's 50th anniversary, as one of the 50 individuals out of 48,000 graduates in the last 50 years, 2016
- Receiving the SEADA research project grant from Icelandic National Research Institute (Rannis) in 2016
- Receiving the Fulbright Grant as a Fulbright Scholar in 2013, to visit University of California at Berkeley, May to August 2015.
- Receiving the largest research project grant from Icelandic National Research Institute (Rannis) in 2011.
- Receiving one of the most competitive research grants from HiTec Institute in Iran in 2006.

- The only recipient of University of Tehran Scholarship for Ph.D. program in Computer Engineering in 1999, with appointment as a faculty member in advance.
- British Chevening Scholarship from the British Chevening Scholarship, March-April 2002.
- Graduated top three in class, M.S. program.
- Graduated first in class, B.S. program.
- Admitted and studied in Gifted Talented High School of Tehran

Leadership:

- Co-founder and co-leader of the Icelandic Center for Research on Software Engineering, at the School of Computer Science, Reykjavik University, since 2008. (<http://labs.ru.is/rose/>)
- Head of Software Engineering Department, School of Electrical and Computer Engineering, University of Tehran, Tehran, Iran, June 2005 to September 2008, building up the department and make it one of the top three SE departments in the country.
- Initiating, organizing and chairing the first international conference on Fundamentals of Software Engineering (FSEN) in 2005, which is the first and only highly credible international conference in the field of Computer Science and Software Engineering in the country with Springer LNCS publication and ACM and IFIP support (hold biannually since 2005).
- Establishing and leading the Formal Methods Research Lab., at the School of ECE, Univ. of Tehran, since 2004.
- Establishing and leading Rebeca Group in Tehran, a research group on modeling and verification of concurrent and distributed systems, using Rebeca and applying compositional verification, working on theory and tools, at ECE Dept. of Tehran University and CE Dept. of Sharif University of Technology, Tehran, since 2002. (<http://www.rebeca-lang.org/>)
Merged in Formal Methods Lab in 2004.

Academic Experience:

Research Projects with competitive grants

- Leading the project: Self-Adaptive Actors: SEADA, RANNIS project nr. IRF - 163205-051, the Icelandic Research Fund, 2016-2018, ~400,00K ISK (315K EUR), co-applicants: Edward Lee, Carolyn Talcott, Narges Khakpour.

- Isavia research fund for: Calculating Loss of Separation Using Earth Centred Vectors, 2840 PKR, 2015-2017
- Isavia research fund for: Test Case Generation for ISAVIA CPAR, 2015-2016
- Rannis NSN- Student Innovation Fund for: Systematic Test of Air Traffic Control Software using Logic-based Test Criteria, total 1530 PKR, 2014
- Isavia research fund for: Systematic Test of Air Traffic Control Software using Logic-based Test Criteria, salary for 3 students for 3 months for a total of 1530 PKR, 2014
- Rannis NSN - Student Innovation Fund for: Analyzing Network Scheduling Model of Icelandair, total 1020 PKR, 2014
- Icelandair research fund for: Analyzing Network Scheduling Model of Icelandair, salary for one students for 3 months for a total of 850 PKR, 2014
- The Icelandic Research Fund, for my PhD student Ali Jafari, 2.5 years salary, 2012
- RU development fund number T10005, Checking the Correctness of Software Encoding Techniques for Detection of Hardware Errors, Reykjavik University, 2010
- Leading the project: Timed Asynchronous Reactive Objects in Distributed Systems: TARO, RANNIS project nr. 110020021, the Icelandic Research Fund, 2011-2013, 100K ISK (130k EUR), co-applicants: Luca Aceto, Anna Ingolfsson, Carolyn Talcott, Ramtin Khosravi, Frank de Boer.
- Leading the project: Reactive Objects in Real-time Applications: RORA, the pilot project, RU Development fund number T09006, Reykjavik University, 2009.
- Leading the project: Sysfier – SystemC Verifier (Grant from Hitec Centre 2006-2008) <http://www.rebeca-lang.org/wiki/pmwiki.php/Tools/Afra>, Formal Methods Lab. of ECE Dept. of Tehran University, Developing an integrated environment for modeling and verifying SystemC designs by formalizing SystemC semantics and providing model checking tools. Rebeca is used as the intermediate language and Rebeca verification tool set is used as the back-end model checkers.
- Collaborating on the Dutch-German project: Syanco - Synthesis and Analysis of Component Connectors (Grant from DFG-NWO 2006-2008) Joint project of CWI and Technische Universität Dresden. Working on formal semantics and formal verification methods for coordination language Reo.

- Collaborating on the European project Credo – Modeling and Analysis of Evolutionary Structures for Distributed Services, where the core language is based on Rebeca and actors.
- Leading the project: Analysis and Comparison of Coordination Models, IPM School of Computer Science, 2008.
- Leading the project: Analysis of Different Approaches in Formal Verification of Networks, IPM School of Computer Science, 2007
- Leading the project: Formal Verification of Network Protocols, IPM School of Computer Science, 2006.
- Leading the project: Component-based Correct Development of Distributed Systems, IPM School of Computer Science, 2005.

Research activities

- Self-adaptive systems and their safety assurance. With Edward Lee and Ali Movaghar.
- Timed and Probabilistic actors, performance analysis and model checking. With Holger Hermanns.
- Working on the computational models and analysis of real-time and embedded systems, defining a real-time actor-based modeling language together with its formal semantics as SOS rules, different case studies, and mapping to Erlang language and Timed Automata. School of Computer Science at Reykjavik University, Reykjavik, with Luca Aceto and Anna Ingolfsdottir, since 2008.
- Working on formal semantics and compositional verification approaches for Rebeca, an actor-based (concurrent object-based) language; using Rebeca in different areas, including agent-based systems, web services, network protocols, security protocols, hardware/software co-design, and real-time systems. ECE Dept. of Tehran University and CE Dept. of Sharif University of Technology, Tehran, since 2001.
- Working on extracting interaction and coordination patterns from actor-based models, Software Engineering Dept., CWI, Amsterdam, with Carolyn Talcott and Farhad Arbab, since 2006.
- Working on formal semantics and formal verification methods for coordination language Reo. Software Engineering Dept., CWI, Amsterdam, with Farhad Arbab, Jan Rutten and Christel Baier, 2003-2006.
- Using Reo for modeling web services and hardware/software co-design, at ECE Dept. of Tehran University, since 2005.

- Compositional modeling and verification approaches, joining UML and Rebeca as a part of European IST project Omega, Software Engineering Dept., CWI, Amsterdam, with Frank de Boer, 2003.
- Model checking algorithms for Constraint Automata, Software Engineering Dept., CWI, Amsterdam and Institut für Informatik, Universität Bonn, Bonn, with Christel Baier, since 2003.
- Model checking tools and algorithms, using Rebeca and Alloy in verifying security protocols, Applied Semantics for Assured Software Group, Department of Computing, Imperial College of Science, Technology, and Medicine, London, 2002, work with Michael Huth.
- Formal methods for verification of distributed real-time systems, reviewing and comparing CCS, CSP, Unity, RML, and Actors, Computer Engineering Dept., Sharif University of Technology, Tehran; with Ali Movaghar, 2001.
- Designed a type-checker for specifications in Constructive-Z, Computer Engineering Dept., Sharif University of Technology, Tehran, with Seyed Hassan Mirian, 1998.

International Visits

- Visiting Ptolemy group at University of California at Berkeley, EECS Dept., May 2016. Visiting Edward Lee
- Fulbright visiting Scholar Ptolemy group at University of California at Berkeley, EECS Dept., May-August 2015. Visiting Edward Lee.
- Visiting Ptolemy group at University of California at Berkeley, EECS Dept., June 2013. Visiting Stavros Tripakis.
- Visiting Scholar at University of Illinois at Urbana-Champaign (UIUC), USA, Sept. to Dec. 2012 (Sabbatical). Visiting Gul Agha.
- Visit Stanford Research Institute (SRI), Menlo Park, USA, Nov. 2011. Work with: Carolyn Talcott.
- Visit University of Illinois at Urbana-Champaign (UIUC), USA, Nov. 2011. Work with Gul Agha.
- Guest Researcher at Coordination Languages Group (invited), Software Engineering Department, National Research Institute for Mathematics and Computer Science in the Netherlands (CWI), Amsterdam, January-February 2005, July and November 2006, July – August 2007, July 2008, July 2009.

Work with: Farhad Arbab, Frank de Boer, Jan Rutten, Christel Baier, Carolyn Talcott.

- Guest Researcher at Coordination Languages Group (invited), Software Engineering Department, National Research Institute for Mathematics and Computer Science in the Netherlands (CWI), Amsterdam, May- June 2004. Work with: Farhad Arbab, Frank de Boer, Jan Rutten.
- Visiting Institut für Informatik (invited), Universität Bonn, Bonn, June 2004. Work with: Christel Baier.
- Researcher at Coordination Languages Group (PostDoc position), Software Engineering Department, National Research Institute for Mathematics and Computer Science in the Netherlands (CWI), Amsterdam, February- November 2003. Work with: Farhad Arbab, Jan Rutten.
- Visiting Institut für Informatik (invited), Universität Bonn, Bonn, July 2003. Work with: Christel Baier.
- Visiting member of the Applied Semantics for Assured Software Group, Department of Computing, Imperial College of Science, Technology, and Medicine, London, March-April 2002. Work with: Michael Huth.

Teaching

Have taught one or two courses each semester, from 1992 to 2008, in top four universities of Tehran on the following topics: Programming Languages, System Analysis and Design, Object Oriented Analysis and Design, Software Engineering, Advanced Topics in Software Engineering (graduate level), and Modeling and Verification of Concurrent Systems (graduate level).

Have taught at School of Computer Science, Reykjavik University since fall 2008.

- Software Engineering II, School of Computer Science, Reykjavik University, Spring Semester 2009- 2016.
- Advanced Software Engineering (graduate level), School of Computer Science, Reykjavik University, Spring Semester 2009- 2016.
- Research Methodologies (graduate level), School of Computer Science, Reykjavik University, Fall Semester 2009- 2013.
- Modeling and Verification of Concurrent Systems (graduate level), Electrical and Computer Engineering Dept., University of Tehran, Spring semesters, 2005 - 2008. <http://ece.ut.ac.ir/Classpages/S86/ECE658/>
- Advanced Software Engineering (graduate level), Electrical and Computer Engineering Dept., University of Tehran, Fall semesters, 2006 - 2008. <http://ece.ut.ac.ir/Classpages/F86/ECE649/>

- System Analysis and Design, Electrical and Computer Engineering Dept., University of Tehran, Spring semesters, 1998 - 2008.
<http://ece.ut.ac.ir/classpages/S85/SystemAnalysis/>
- Programming Languages Analysis and Design, Electrical and Computer Engineering Dept., University of Tehran, Fall semesters, 1998 - 2008.
<http://ece.ut.ac.ir/Classpages/F85/ProgrammingLanguagesDesign/>
- Object Oriented Analysis and Design, Electrical and Computer Engineering Dept., University of Tehran, two semesters 1999 - 2000.
- Software Engineering Laboratory, Computer Engineering Dept., Sharif University of Technology, four semesters 1999 - 2001.
- Software Engineering, Computer Science Dept., Shahid Beheshti University, eight semesters 1994 - 1998.
- Software Engineering, Electrical and Computer Engineering Dept., University of Tehran, one semester 1997.
- Software Engineering, Computer Engineering Dept., Amir Kabir University of Technology, one semester 1997.
- Introduction to Computer Science, Computer Engineering Dept., Sharif University of Technology, five semesters 1992 - 1997.

Supervising

Supervised more than 60 **undergraduate** projects (BS final projects) in top three universities of Iran and Reykjavik University:

- Reykjavik University, 2008 – present.
- University of Tehran, 1998 - 2008;
- Sharif University of Technology, 2001- 2003;
- Shahid Beheshti University, 1994 - 1998.

Projects including:

- Model checking different versions of MIPS in SystemC using Afra, 2008
- Modeling and model checking rail-road control charts using Rebeca, 2008
- Mapping BPEL to Reo, 2007 (resulted in publication no. 32 below).
- Coordinating reactive objects using Reo, 2007.
- SOS semantics for Rebeca, 2007.
- Defining a UML profile for Rebeca, 2006 (resulted in publications no. 24, 30).
- Modeling RTL hardware using Rebeca, 2005 (resulted in publication no. 34).
- Modeling and verification of an agent-based system, 2004.
- Analysis, design and implementation of a tool for automated join/hide operations on Constraint Automata, 2004 (resulted in publication no. 17).

- Extending Rebeca to support synchronous messages, 2004 (resulted in publication no. 13).
- Analysis, design, and implementation of Rebeca to Promela translator, 2003 (resulted in publication no. 11).
- Multiple case studies for using Rebeca in modeling and verification of distributed and open systems, 2003 (resulted in publication no. 9).
- Analysis, design, and implementation of Rebeca to SMV translator, 2002 (resulted in publication no. 6, 7).
- Comparing CSP, RML, and Rebeca in specification and verification of concurrent systems, case studies, 2002.
- Converting Rebeca codes into Java and model checking their properties, 2001.
- Development of a web site for advertisement, following USDP and using UML and Rational Rose tool for development. 2000.
- Development of a web site for florists, using Power Designer tool for development, 2000.
- Development of a school teacher assistant program, 1998.
- Development of an expert system for diagnosis of dental diseases, 1998.
- Development of an expert system for diagnosis of psychological diseases using Exsys shell, 1997.

Supervising of **graduate** projects (MS thesis) - finished and on-going:

- Modeling Hadoop Schedulability using Timed Rebeca, Helgi Leifsson, 2014
- Moving towards analyzability in Fisheries system management, Ástvaldur Sigurðsson, 2013.
- Simulation-based Analysis of Timed Rebeca using Te-Prop and SQL, Brynjar Magnusson, 2012.
- Event-based Analysis of Real-Time Actor Models, Haukur Kristinnsson, 2012.
- From Axiomatic Systems to REPLICODE, to Non-Axiomatic Systems, Olafur Hlynsson, co-supervisor Kristinn Thorisson, 2011.
- Applying Game Search Heuristics in Model Checking, Steinar Hugi Sigurdarson, co-supervisor Yngvi Bjornsson, 2010. (Resulted in publication no. 53)
- Executing Timed Rebeca Models using Erlang (mapping and further analysis), Arni Hermann Reynisson 2010. (Resulted in publication no. 50)
- Distributed Product of Constraint Automata using CUDA, Gunnar Kristinn Vilbergsson, 2009.
- Analyzing Timed Rebeca using UPPAAL, Mohammad Javad Izadi, 2009.

- Web Service Composition using Reo (mapping BPEL to Reo and analyze the model using constraint automata), Farzad Mahdikhani, 2008. (Resulted in publication no. 41)
- Abstracting Rebeca Models for Formal Verification (incorporating abstraction techniques in Rebeca model checker tool), Hamideh Sabouri, 2008. (Resulted in publication no. 40)
- Using Artificial Intelligence in Model Checking Rebeca Models, Raziieh Behjati, 2008. (Resulted in publication no. 43)
- Study and Apply Reduction Techniques in Rebeca CTL Model Checker, Hooman BandehMoghaddam, 2008.
- Developing CTL Model Checker for Rebeca, Mehdi Sarmadi, 2007.
- Formal Verification of Object-based Systems using Process Algebra (using mCRL2 to verify Rebeca and SystemC codes), Hossein Hojjat, 2007. (Resulted in publication no. 29)
- Using Software Techniques in Hardware Verification (using Reo and constraint automata for hardware/software co-design), Niloofar Razavi, 2006. (Resulted in publications no. 25, 28)
- Investigating the Analyzability of the Coordination Language Reo (studying different semantics of Reo and classifying different kinds of priorities which can be considered in Reo and constraint automata), Samira Tasharofi, 2006.
- Modeling and Verification of Security Protocols using Rebeca, Ali Abdolrahmani, 2006.

Co-supervising of **graduate** projects in other universities - finished and on-going:

- SmartHub: an agent based simulation framework for validating smart mobility solutions, J. de Berardinis, C. Castagnari, G. Forcina, (Camerino-RU double degree), 2016
- Mapping Timed Rebeca to Real-Time Maude, Zeynab Sabahi, University of Tehran, 2012
- Performance Analysis and Deadlock Detection of NoC, Zeynab Sharifi, University of Tehran, 2011
- Distributed Model Checking of Rebeca, Ehsan Khamespanah, AmirKabir University of Technology, 2008.
- Using SAT-Solvers to Model Check Rebeca for Data-Centric Applications, Marieh Jahania, Sharif University of Technology, 2008.

- Model checking Rail-Road Control Charts using Rebeca, Mohammad Bemani Yazdi, Iranian University of Science and Technology, 2008.
- Compositional Semantics for Rebeca using Constraint Automata and Implementing a Tool for Automatic Conversion, Mahmood Farokhian, Sharif University of Technology, 2005.
- Verification of Rebeca models using Partial-Order and Symmetry Techniques, Mohammad Mahdi Jaghouri, , Sharif University of Technology, 2005. (Resulted in publications no. 14, 15)

Post-Docs:

Ali Jafari, Self-adaptive Actors, at RU, 2016.

Ute Schiffel, Analyzing Software Encoding Techniques: ASET, at RU, 2011-2012

PhD Graduate:

Ali Jafari - Performance Evaluation of Timed Asynchronous Reactive Objects in Distributed Systems – RU, graduated April 2016

Narges Khakpour – Modeling and Analysis of Self-Adaptive Systems, University of Tarbiat Moddaress, Tehran, graduated in April 2012 (is granted the double-degree offer from Leiden)

PhD Students:

Ehsan Khamespanah – Model Checking Timed Actors - University of Tehran, and RU, started 2010, will graduate 2016

Maryam Bagheri, Sharif University of Technology, started 2014

Other Experience

- Establishing IceRose Research Lab, School of Computer Science, Reykjavik University, 2008.
- Established Formal Methods Lab, School of Electrical and Computer Engineering, University of Tehran, 2004.
- Established Software Engineering Laboratory, School of Electrical and Computer Engineering, University of Tehran, 2001.
- Established Software Engineering Laboratory, Computer Engineering Dept., Sharif University of Technology, 1999.

Publications:

h-index: 18

i10-index: 42

source: <https://scholar.google.com/citations?user=TKnSrTQAAAAJ&hl=en>

Peer-reviewed journal papers:

25. MM Jaghoori, F de Boer, D Longuet, T Chothia, M Sirjani, Compositional schedulability analysis of real-time actor-based systems, *Acta Informatica*, 1-36, 2016
24. [Ali Jafari](#), [Ehsan Khamespanah](#), [Haukur Kristinsson](#), Marjan Sirjani, [Brynjar Magnusson](#): **Statistical model checking of Timed Rebeca models**. [Computer Languages, Systems & Structures 45](#): 53-79 (2016)
23. [Ali Jafari](#), [Ehsan Khamespanah](#), Marjan Sirjani, [Holger Hermanns](#), [Matteo Cimini](#): **PTRebeca: Modeling and analysis of distributed and asynchronous systems**. [Sci. Comput. Program. 128](#): 22-50 (2016)
22. [Ehsan Khamespanah](#), Marjan Sirjani, [Mohammad Reza Mousavi](#), [Zeynab Sabahi-Kaviani](#), [Mohammadreza Razzazi](#): **State Distribution Policy for Distributed Model Checking of Actor Models**. [ECEASST 72](#) (2015)
21. [Zeynab Sabahi-Kaviani](#), [Ramtin Khosravi](#), [Peter Csaba Ölveczky](#), [Ehsan Khamespanah](#), Marjan Sirjani: **Formal semantics and efficient analysis of Timed Rebeca in Real-Time Maude**. [Sci. Comput. Program. 113](#): 85-118 (2015)
20. Ehsan Khamespanah, Marjan Sirjani, Zeynab Sabahi-Kaviani, Ramtin Khosravi, Mohammad-Javad Izadi, Timed Rebeca schedulability and deadlock freedom analysis using bounded floating time transition system. *Science of Computer Programming*, 98: 184-204 (2015)
19. Ali Jafari, Ehsan Khamespanah, Marjan Sirjani, Holger Hermanns, Performance Analysis of Distributed and Asynchronous Systems using Probabilistic Timed Actors. *ECEASST 70* (2014)
18. A. H. Reynisson, M. Sirjani, L. Aceto, M. Cimini, A. Jafari, A. Ingolfsdottir, S. H. Sigurdarson, Modelling and Simulation of Asynchronous Real-Time Systems using Timed Rebeca, *Science of Computer Programming*, 2014
17. Z. Sharifi, M. Mosaffa, S. Mohammadi, M. Sirjani: Functional and Performance Analysis of Network-on-Chips Using Actor-based Modeling and Formal Verification. *ECEASST 66* (2013)
16. N. Khakpour, S. Jalili, M. Sirjani, Ursula Goltz, Bahareh Abolhasanzadeh, HPobSAM for Modeling and Analyzing IT Ecosystems - Through a Case Study, *Journal of Systems and Software* 85 (12): 2770-2784, Elsevier, 2012.
15. N. Khakpour, S. Jalili, C. Talcott, M. Sirjani, M. R. Mousavi, Formal Modeling of Evolving Self-Adaptive Systems, *Science of Computer Programming* 78(1), 3-26, 2012.

14. B. Pourvatan, M. Sirjani, H. Hojjat, F. Arbab, Symbolic execution of Reo circuits using constraint automata, *Science of Computer Programming*, 77(7-8): 848-869 (2012).
13. H. Hojjat, M.R. Mousavi, and M. Sirjani. Formal Analysis of SystemC Designs in Process Algebra, *Fundamenta Informaticae*, 107 (1): 19-42, IOS Press, 2011. (An extended and improved version of the ACSD 2008 paper.)
12. H. Sabouri, M. Sirjani, Actor-based Slicing Techniques for Efficient Reduction of Rebeca Models, *Science of Computer Programming*, 75(10): 811-827 (2010).
11. C. Talcott, M. Sirjani, S. Ren, Comparing Three Coordination Models: Reo, ARC, and RRD, *Science of Computer Programming*, 76(1): 3-22 (2011).
10. N. Razavi, R. Behjati, H. Sabouri, E. Khamespanah, A. Shali, M. Sirjani, Sysfier: Actor-based Formal Verification of SystemC, *ACM Transactions on Embedded Computing Systems*, Vol. 10, No. 2, Article 19, December 2010.
9. M. M. Jaghoori, M. Sirjani, M. R. Mousavi, E. Khamespanah, A. Movaghar, Symmetry and Partial Order Reduction Techniques in Model Checking Rebeca, *Acta Informatica*, Volume 47, Issue 1, pp. 33-66, 2009.
8. M.M. Jaghoori, F. de Boer, T. Chotia, and M. Sirjani, Schedulability of asynchronous Real-time concurrent objects, *Journal of Logic and Algebraic Programming*, Elsevier, Volume 78, Issue 5, pp. 402-416, 2009.
7. H. R. Shahriari, M. S. Makarem, M. Sirjani, R. Jalili, A. Movaghar, Vulnerability Analysis of Networks to Detect Multiphase Attacks Using the Actor-based Language Rebeca, *Journal of Computers and Electrical Engineering*, Elsevier, available online June 2008.
6. H. Hojjat, H. Nakhost, M. Sirjani., Integrating Module Checking and Deduction in a Formal Proof for the Perlman Spanning Tree Protocol (STP), *Journal of Universal Computer Science (J.UCS)*, vol 13, no. 13, pp. 2076-2104, 2007.
5. C. Baier, M. Sirjani, F. Arbab, J.J. Rutten, Modeling component connectors in Reo by constraint automata, *Journal of Science of Computer Programming*, Vol. 61, Issue 2, pp. 75-113, July 2006.
4. M. Sirjani, A. Movaghar, A. Shali, F. S. de Boer: Model Checking, Automated Abstraction, and Compositional Verification of Rebeca Models. *J. UCS* 11(6), pp. 1054-1082, 2005.
3. M. Sirjani, A. Movaghar, Integrating Model Checking and Deduction for an Actor-Based Language, *Scientia Journal* 12(1), pp. 55-65, 2005.

2. M. Sirjani, F. S. de Boer, A. Movaghar, Modular Verification of a Component-based Actor Language, J.UCS 11(10), pp. 1695–1717, 2005.
1. M. Sirjani, A. Movaghar, A. Shali, F.S. de Boer, Modeling and Verification of Reactive Systems using Rebeca, Fundamenta Informaticae, Volume 63, Number 4, ISSN 0169-2968, pp. 385-410, 2004.

Peer-reviewed Conference Papers:

67. Maryam Bagheri, Ilge Akkaya, Ehsan Khamespanah, Narges Khakpour, Marjan Sirjani, Ali Movaghar, Edward, lee, Coordinated Actors for Reliable Self-Adaptive Systems, FACS 2016
66. M. Sirjani, E. Khamespanah: On Time Actors, Theory and Practice of Formal Methods 2016, LNCS 9660, 2016
65. E. Khamespanah, K. Mechtov, M. Sirjani, G. Agha: Schedulability Analysis of Distributed Real-Time Sensor Network Applications Using Actor-Based Model Checking, SPIN, 2016
64. A. Zakarian, E. Khamespanah, M. Sirjani, R. Khosravi, Jacco: More Efficient Model Checking Toolset for Java Actor Programs, Agere 2015, USA, 2015
63. E. Khamespanah, M. Sirjani, M. Viswanathan, R. Khosravi, Bounded Floating-Time Transition System: Significant Reduction for Analysing Actors, FACS 2015, Brazil, Oct. 2015
62. E. Khamespanah, M. Sirjani, M.R. Mousavi, Z. Sabahi Kaviani and M. Razzazi, State Distribution Policy for Distributed Model Checking of Actor Models, AVoCS 2015, UK, Sept. 2015
61. B. Magnusson, E. Khamespanah, M. Sirjani, R. Khosravi, Event-based Analysis of Timed Rebeca Models using SQL, AGERE 2014, USA, October 2014
60. E. Khamespanah, M. Sirjani, R. Khosravi, Efficient TCTL Model Checking Algorithm for Timed Actors, AGERE 2014, USA, October 2014
59. A. Jafari, E. Khamespanah, [M. Sirjani](#) and [H. Hermanns](#), Performance Analysis of Distributed and Asynchronous Systems using Probabilistic Timed Actors, In: AVoCS 2014, Netherlands, 2014
58. Z. Sabahi-Kaviani, R. Khosravi, M. Sirjani, P. Ölveczky, and E. Khamespanah, Formal Semantics and Analysis of Timed Rebeca in Real-Time Maude, In: FTSCS 2013
57. H. Kristinsson, A. Jafari, E., Khamespanah, B. Magnusson, M. Sirjani: Analysing Timed Rebeca using McErlang. In: AGERE@Splash 2013

56. Z. Sharifi, M. Mosaffa, S. Mohammadi, M. Sirjani, Functional and Performance Analysis of Network-on-Chips Using Actor-based Modeling and Formal Verification, AVoCS 2013 (conference pre-proceedings)
55. Z. Sharifi, S. Mohammadi, M. Sirjani, Comparison of NoC Routing Algorithms Using Formal Methods, PDPTA 2013
54. E. Khamespanah, Z. Sabahi Kaviani, R. Khosravi, M. Sirjani, M.J. Izadi, Timed-Rebeca Schedulability and Deadlock-Freedom Analysis Using Floating-Time Transition System, ACM AGERE! 2012
53. S. Sigurdarson, M. Sirjani, Y. Bjornsson, A. Reynisson, Guided Search for Deadlocks in Actor-Based Models, LNCS of FACS 2012
- 53-2. Narges Khakpour, Marjan Sirjani, Ursula Goltz: Context-Based Behavioral Equivalence of Components in Self-Adaptive Systems. ICFEM 2011: 16-32
52. M. Sirjani, M. M. Jaghoori, Ten Years of Analyzing Actors: Rebeca Experience, LNCS 7000, pp. 20-56, 2011
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- H. Hojjat, M. R. Mousavi, M. Sirjani, Application of process algebraic verification and reduction techniques to SystemC designs, Computer Science Report No. 08-15, Technische Universiteit Eindhoven, 2008.
- M. M. Jaghoori, M. Sirjani, M.R. Mousavi, A. Movaghar, Symmetry and Partial Order Reduction Techniques in Model Checking Rebeca, SEN-R0704, CWI, Amsterdam, July 2007.
- M. Sirjani, F.S. de Boer, A. Movaghar and A. Shali, Extending Rebeca with Synchronous Messages and Reusable Components, SEN-R0505, CWI, Amsterdam, March 2005.
- F. Arbab, C. Baier, F.S. de Boer, J.J.M.M. Rutten and M. Sirjani, Synthesis of Reo Circuits For Implementation Of Component-Connector Automata Specifications, SEN-R0412, CWI, Amsterdam, August 2004.
- M.R. Mousavi, M. Sirjani, and F. Arbab, Specification and Verification of Component Connectors, Technical report 04-15, Department of Computer Science, Eindhoven University of Technology, Eindhoven, June 2004.

- N.R. Mehta, M. Sirjani and F. Arbab, Effective Modeling of Software Architectural Assemblies Using Constraint Automata, SEN-R0309, CWI, Amsterdam, October 2003.
- F. Arbab, C. Baier, J.J.M.M. Rutten and M. Sirjani, Modeling Component Connectors in Reo by Constraint Automata, SEN-R0304, CWI, Amsterdam, July 2003.
- M. Sirjani and A. Movaghar, An Actor-Based Model for Reactive Systems: Rebeca, Computer Engineering Dept, Sharif University of Technology, Tehran, 2001.
- M. Sirjani, A. Movaghar, H. Iravanchi, M.M. Jaghoori and A. Shali, Model Checking Rebeca by SMV, Computer Engineering Dept, Sharif University of Technology, October 2002, (in Farsi).
- M. Sirjani, Formal Specification and Verification of Concurrent and Real-time Systems, Computer Engineering Dept., Sharif University of Technology, July 2000 (in Farsi).
- M. Sirjani, Lecture Notes used for teaching Programming Languages Analysis and Design, 1999 (in Farsi).
- M. Sirjani, Lecture Notes used for teaching Software Engineering, 1995 (in Farsi).

Talks and Presentations

- Deterministic Actors in a Nondeterministic World, DPAC fall summit 2016, Malardalen University, Sweden, Sept. 2016
- Coordinating Adaptive Actors - CoodAA: A Framework for Reliable Self-Adaptive Systems, UC Berkeley, USA, May 4, 2016
- On Time Actors, Eindhoven, Frank de Boer Festschrift, The Netherlands, April 3, 2016 (<https://ths.rwth-aachen.de/fdb60/>)
- On Time Actors in Doubt, IPM Formal Methods Day, Tehran, Iran, Jan. 10, 2016 (<http://cs.ipm.ac.ir/fmd2016/>)
- On Time Actors in Cyber-Physical Systems, Sharif University of Technology, Tehran, Iran, Dec. 14, 2015
- Actors in the Modern Era: Timeliness and Uncertainty, Malardalen University, Vasteras, Sweden, Nov. 11, 2015

- Usable, Analyzable, Faithful Timed Actors: Schedulability and Deadlock Freedom, UC Berkeley, June 2015
- Rebeca Actors: Timed Event-based Message Passing Models, Model Checking and Performance Analysis, UC Berkeley, May 2015
- Timed Event-based Message Passing Models: Model Checking and Performance Analysis, Halmstad, Nov. 2014
- Analysis of Network-on-Chips using Probabilistic Timed Actors, Tenth ICE-TCS Theory Day, Reykjavik University, Iceland, August 2014
- Timed Event-based Message Passing Models, invited talk at Formal Methods Lab. of School of Electrical Engineering at University of Tehran, Tehran, Iran, July 2014
- Actors with Timing Constraints and Probabilistic Behaviors, invited talk at Dipartimento di Elettronica, Informazione e Bioingegneria of Politecnico di Milano, June 25th, 2014
- Challenges of Verification of Distributed Systems, invited talk at the Workshop of Reliability of Concurrent and Distributed Software, Lorentz Center, May 2014
- Edmond Clarke: Sharing a Turing Award for Model Checking, Pearls of Computation series of talk, Reykjavik, Iceland, February 2014
- Analysing Timed Rebeca using McErlang, AGERE 2013, Indianapolis, USA, October 2013
- Floating Time Transition System, invited talk as an observer at IFIP W2.2, Lisbon, Portugal, September 2013 (invited)
- Functional and Performance Analysis of Network-on-Chips Using Actor-based Modeling and Formal Verification, AVoCS 2013, Guildford, UK, September 2013
- Schedulability, Deadlock Freedom, and Performance Analysis of Timed Actors, at UC Berkeley, Design of Robotics and Embedded systems, Analysis, and Modeling Seminar (DREAMS), Berkeley, USA, June 2013 (invited)
- Analyzability of Actors - Asynchronous Event-based Message-passing Models, The First IPM Conference on Theoretical Aspects of Computer Science, IPM-TACS, December 2012, invited speaker
- Compositional Verification of Actors, invited talk at Divide and Conquer: the Quest for Compositional Design and Analysis, [Dagstuhl Seminar 12511](#), December 2012 (invited)

- Timed-Rebeca Schedulability and Deadlock-Freedom Analysis Using Floating-Time Transition System, AGERE! Splash workshop, Tucson, Arizona, USA, October 2012
- Timed Event-based Message Passing Models: Schedulability, Deadlock Freedom, and Performance Analysis, invited talk at Formal Methods seminar in the Computer Science Department at the University of Illinois, Urbana-Champaign, USA, October 2012
- Guided Search for Deadlocks in Actor-Based Models, FACS 2012, NASA Ames, Mountain View, USA, September 2012
- Reduction Techniques in Verifying Rebeca Models, invited talk at Formal Methods seminar in the Computer Science Department at the University of Illinois, Urbana-Champaign, USA, November 2011
- Ten Years of Analyzing Actors: Rebeca Experience, invited peer-reviewed paper, SRI International, Menlo Park, USA, November 2011
- Rebeca: Actors in the Concurrent and Distributed World, invited talk, School of ECE, University of Tehran, Tehran, Iran, December 2010
- Synthesis of Reo Circuits through Decomposition of Complete Constraint Automata, [FACS 2010](#), Guimarães, Portugal, October 2010.
- The Coordination Language Reo: Semantics and Analysis, invited talk as an observer at IFIP W2.2, Warsaw, Poland, September 2010
- A Tutorial talk on the Coordination Language Reo, ICE-TCS seminar, Reykjavik, Iceland, September 2010
- Constraint Automata: Symbolic Execution or not?, ICE-TCS seminar, Reykjavik, Iceland, April 2010
- Can we build software that never ever crashes, invited talk at Reykjavik University Lecture Marathon, March 2010
- Symbolic Execution of Reo Circuits Using Constraint Automata, long lecture, Syanco winter school, Berlin, Germany, February 2010
- Actors Performing: Domain Specific Modeling and Analysis, invited talk as an observer at IFIP W2.2, Bologna, Italy, Sept 2009
- Automated Analysis of Reo Circuits using Symbolic Execution, FOCLASA09, Rhodes Island, Greece, July 2009.
- Symbolic Execution of Reo Circuits, CIC workshop, Baraga, Portugal, May 2009.

- An Introduction to Formal Methods in Software Engineering, ICE-TCS seminar, Reykjavik, Iceland, February 2009
- Formal Modeling and Conformance Validation for WS-CDL using Reo and CASM, in the 7th International Workshop on the Foundations of Coordination Languages and Software Architectures (FOCLASA), Reykjavik, Iceland, July 2008.
- Capturing SystemC Semantics by Actors and Applying Specific Reduction Techniques in Model Checking, in the MoCC Workshop, Technical University of Eindhoven, Eindhoven, Netherlands, July 2008.
- Actors in Practice, Reykjavik University, Reykjavik, Iceland, March 2008.
- Modeling Web Service Interactions using the Coordination Language Reo, in the 4th International Workshop on Web Services and Formal Methods (WS-FM), Brisbane, Australia, September 2007.
- Modeling Sequential and Concurrent Programs with Reo and Constraint Automata, In the 6th International Workshop on the Foundations of Coordination Languages and Software Architectures (FOCLASA), a Satellite Workshop of CONCUR, Lisbon, Portugal, September 2007.
- Modeling Web Service Interactions using the Coordination Language Reo, in the International workshop on Synthesis and analysis of component connectors (Syanco): in conjunction with the 6th ESEC/FSE, Dubrovnik, Croatia, September 2007.
- Abstraction and Compositional Verification Techniques for Asynchronous Communicating Components, in the Conference of Formal Methods for Components and Object (FMCO), Amsterdam, Netherlands, November 2006.
- Actor-based Computation, Asynchronous Communication, and Compositional Verification in Rebeca, in the Dipartimento di Informatica, Universita di Pisa, Pisa, Italy, June 2006 (invited).
- Compositional Semantics of an Actor-Based Language using Constraint Automata, in the Conference of Coordination, Bologna, Italy, June 2006.
- Using Reo and Constraint Automata in Hardware/Software Co-design, ACG talk, CWI, Amsterdam, the Netherlands, August 2006.
- Modeling GALS using Rebeca, School of Computer Science, IPM, Tehran, Iran, September 2005.

- Extended Rebeca: A Component-Based Actor Language with Synchronous Message Passing, in the Conference of Applying Concurrency in System Design (ACSD), Saint Malo, France, June 2005.
- Reactive Objects as Components in Reo Circuits, ACG Talk, CWI, Amsterdam, the Netherlands, June 2005.
- Reo to Constraint Automata, Department of Computer Science, University of Waterloo, Waterloo, Canada, June 2004 (invited).
- Automated Abstraction and Modular Verification of Actor-Based Models, in the Conference of Applying Concurrency in System Design (ACSD), Hamilton, Canada, IEEE Computer Society, June 2004.
- Constraint Automata: The Modeling Tool, Project meeting, Institut für Informatik, Universität Bonn, Bonn, Germany, June 2004.
- My Research at CWI in Brief, ECE Department, University of Tehran, Tehran, Iran, December 2004.
- Reo: Semantics and Tools for Design and Analysis: State of the Art and Future Work, ACG Talk (together with Christel Baier), CWI, Amsterdam, The Netherlands, November 2003.
- Modeling component connectors in Reo by constraint automata, ACG Talk, CWI, Amsterdam, the Netherlands, May 2003.
- An Introduction to Rebeca and Reo Projects, ECE Department, University of Tehran, Tehran, Iran, May 2003.
- Rebeca: An Actor-Based Language for Formal Modeling and Verification of Reactive Systems, ACG Talk, CWI, Amsterdam, the Netherlands, March 2003.
- Model Checking Rebeca by SMV, in the Workshop on Automated Verification of Critical Systems (AVoCS'03), University of Southampton, Southampton, UK, April 2003.
- An Object-Based Model for Agents, in the Workshop on Agents for Information Management, Eurasia'02, Shiraz, Iran, Austrian Computer Society, October 2002.
- A Calculus for Real-Time Specification Statements, in the Workshop on Recent Progress in Computers and Communication, Eurasia'02, Shiraz, Iran, Austrian Computer Society, October 2002.
- Simulation in Rebeca, in the 2002 International Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA' 02), Las Vegas, USA, June 2002.

- Simulation in Rebeca, in the Workshop on Automated Verification of Critical Systems (AVoCS'02), University of Birmingham, Birmingham, UK, April 2002.
- Compositional Verification of an Actor-Based Model for Reactive Systems, in the Workshop on Automated Verification of Critical Systems (AVoCS'01), Oxford University, Oxford, UK, April 2001.

Editorial work:

- Fundamentals of Software Engineering - 6th International Conference, FSEN 2015, Tehran, Iran, April 22-24, 2015, Revised Selected Papers. LNCS 9392, Springer 2015
- Fundamentals of Software Engineering (selected papers of FSEN 2013). *Sci. Comput. Program.* 112 (2015)
- Fundamentals of Software Engineering (selected papers of FSEN 2011). [Sci. Comput. Program.](#) 78(12): 2433-2434 (2013)
- Fundamentals of Software Engineering - 5th International Conference, FSEN 2013, Tehran, Iran, April 24-26, 2013, Revised Selected Papers. LNCS 8161, Springer 2013
- Fundamentals of Software Engineering - 4th IPM International Conference, FSEN 2011, Tehran, Iran, April 20-22, 2011, Revised Selected Papers, LNCS 7141, Springer 2012
- Coordination Models and Languages - 14th International Conference, COORDINATION 2012, Stockholm, Sweden, June 14-15, 2012. Proceedings LNCS 7274, [Springer 2012](#)
- Special issue on Foundations of Coordination Languages and Software Architectures (selected papers from FOCLASA'09). *Sci. Comput. Program.* 77(7-8): 777-778 (2012)
- Fundamentals of software engineering (selected papers of FSEN '09). *Sci. Comput. Program.* 77(7-8): 887-888 (2012)
- FSEN09 Proceedings, LNCS 5961 (2009)
- Special issue of Science of Computer Programming [76\(8\)](#), for invited papers of FOCLASA08
- FOCLASA08 Proceedings, Elsevier [ENTCS 229, Issue 2](#), (2009)
- Special issue in Fundamenta Informaticae (FI): Behaviours of Composed Concurrent Systems: Logic and Reasoning, [FI 82\(4\)](#) (2008)
- Special issue in Journal of Universal Computing (J.UCS): Applications of Formal Methods to System Design and Verification, [J.UCS 13\(13\)](#) (2007)
- FSEN07 Proceedings, [LNCS 4767](#) (2007)
- FSEN05 Proceedings: Elsevier [ENTCS 159](#) (2006)

Conference organization:

- PC Chair of SEFM 2016
 - SC Chair of FSEN
 - PC Chair of FSEN 2005, 2007, 2009, 2011, 2013, 2015
 - General Chair of iFM 2016
 - PC Chair of Coordination 2012
 - SC member of DisCoTec'12, 2013, 2014, 2015
 - SC member of Coordination 2013, 2014, 2015
 - General Chair of DisCoTec'11
 - PC Chair of FOCLASA 2008, 2009
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- PC member of COOPIS 2016
 - PC member of SEFM 2014, 2015
 - PC member of ACM SAC - Verification and Testing 2015
 - PC member of ACM SAC - Coordination Models 2015
 - PC member of FACS 2009, 2011, 2013, 2014
 - PC member of Coordination 2010, 2011, 2012, 2013, 2014, 2015
 - PC member of ICFEM 2007, 2010, 2011, 2012, 2013
 - PC member of ICTAC 2009, 2010, 2011, 2013
 - PC member of AGERE'12, 2013, 2014, 2015
 - PC member of FMICS 2011, 2012
 - PC member of ICSSEA 2011, 2012
 - PC member of FOCLASA 2008, 2009, 2010, 2012, 2013, 2014, 2015
 - PC member of TAV-WEB-10
 - PC member of FM'09, 2016
 - PC member of WS-FM'06
 - PC member of CSICC'05
-
- Organizing IPM-UNU Winter School on Foundations and Trends in Computer Science, Feb. 2008.
 - Organizing the IPM-UT workshop on Processes: from Theory to Practice, July 2006.
 - Organizing the one day workshop on Formal Models for Reasoning about Objects & Component Composition, Feb. 2004.
 - Responsible for International Relationships, 9th International CSI Computer Conference (CSICC'04), Sharif University of Technology, Tehran, Iran, February 2004.
 - Registration Chair for the Tehran site, Asia Region in ACM Regional Programming Contest, August-November 1999.

Other Professional Experience:

- Managing Director of Behin-System Computer Services Company, Tehran, 1989 - 2002. A private company with average of 15 employees. Participated in developing software as a manager, analyst, designer, and programmer.

Publicly available software tools

- Afra model checking tool suite

<http://www.rebeca-lang.org/Rebeca/Tools>

References:

Gul Agha: Department of Computer, University of Illinois at Urbana Champaign, USA

Farhad Arbab: Software Engineering Department, Centre for Mathematics and Computer Science (CWI), Amsterdam, Netherlands

Christel Baier: Institut für Informatik, Universität Bonn, Bonn, Germany

Frank de Boer: Software Engineering Department, Centre for Mathematics and Computer Science (CWI), Amsterdam, Netherlands

Edward Lee: Electrical Engineering and Computer Science, University of California at Berkeley, USA

Ali Movaghar: Computer Engineering Department, Sharif University of Technology, Tehran, Iran

Carolyn Talcott: Computer Science Laboratory, SRI International, Menlo Park, USA