

MARJAN SIRJANI

Curriculum Vitae

School of Computer Science
Reykjavik University
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Fields of Interest:

Software Engineering, Formal Methods, Object-Oriented Modeling, Component-Based Modeling, Formal Verification, Abstraction and Compositional Verification, Applying Formal Methods in System Design

Positions and Education:

- Associate Professor, School of Computer Science, Reykjavik University, Reykjavik, Iceland. (2008 –)
- Member of Expert Panel on Engineering, Technical Science and Physical Sciences - RANNÍS - The Icelandic Centre for Research. (2011 -)
- Head of Graduate Studies Council, School of Computer Science, Reykjavik University, Reykjavik, Iceland. (2010 –)
- Assistant Professor, School of Electrical and Computer Engineering, University of Tehran, Tehran, Iran. (2004 –)
- 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, December 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:

- The only recipient of University of Tehran Scholarship for Ph.D. program in Computer Engineering in 2002, with appointment as a faculty member in advance.
- British Chevening Scholarship from the Foreign and Commonwealth Office of the British Council, 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:

- 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 in 2005, 2007, and 2009).
- 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://www.reykjavikuniversity.is/icerose/>)
- Establishing and leading the Formal Methods Research Lab., at the School of ECE, Univ. of Tehran, since 2004. (<http://ece.ut.ac.ir/FML>)
- 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://khorshid.ece.ut.ac.ir/~rebeca>)
Merged in Formal Methods Lab in 2004.

Academic Experience:

Research Projects with competitive grants

- 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://khorshid.ece.ut.ac.ir/~rebeca/afra.html>, 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) <http://db.cwi.nl/projecten/project.php4?prjnr=211>
Joint project between 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

- 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

- 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.

- Research Methodologies (graduate level), School of Computer Science, Reykjavik University, Fall Semester 2009-2011.
- Software Engineering II, School of Computer Science, Reykjavik University, Spring Semester 2009-2011.
- Advanced Software Engineering (graduate level), School of Computer Science, Reykjavik University, Spring Semester 2009-2011.
- 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/S86/ECE460/>
- 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 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 (finished and on-going):

- Applying Game Search Heuristics in Model Checking, Steinar Hugi Sigurdarson, co-supervisor Yngvi Bjornsson, 2010.
- Executing Timed Rebeca Models using Erlang (mapping and further analysis), Arni Hermann Reynisson 2010.
- 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):

- 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)

PhD Students (supervisor or co-supervisor):

Ali Jafari
 Hamideh Sabouri
 Ehsan Khamespanah
 Narges Khakpour (graduating)

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:

Peer-reviewed journal papers:

15. N. Khakpour, S. Jalili, C. Talcott, M. Sirjani, M. M. Mousavi, Formal Modeling of Evolving Self-Adaptive Systems, *Science of Computer Programming*, Accepted 2011
14. B. Pourvatan, M. Sirjani, H. Hojjat, F. Arbab, Symbolic execution of Reo circuits using constraint automata, *Science of Computer Programming*, Accepted 2011
13. H. Hojjat, M.R. Mousavi, and M. Sirjani. Formal Analysis of SystemC Designs in Process Algebra, *Fundamenta Informaticae*, IOS Press, 2011. To appear. (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*, Accepted 2009, 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:

52. M. Sirjani, M. M. Jaghoori, Ten Years of Analyzing Actors: Rebeca Experience, *LNCS* 7000, pp. 20-56, 2011
51. M. M. Jaghoori, O. Hlynsson, M. Sirjani, Networks of Real-Time Actors: Schedulability Analysis and Coordination, 8th International Workshop on Formal Aspects of Component Software ([FACS 2011](#)), 2011
50. L. Aceto, M. Cimini, A. Ingolfsdottir, A. H. Reynisson, S. H. Sigurdarson, M. Sirjani, Modelling and Simulation of Asynchronous Real-Time Systems using Timed Rebeca, *ENTCS*, Proceedings of FOCLASA 2011
49. B. Pourvatan, M. Sirjani, F. Arbab, M. Bonsangue, Synthesis of Reo Circuits through Decomposition of Complete Constraint Automata, 7th International Workshop on Formal Aspects of Component Software ([FACS 2010](#)), October 14-16, 2010, Guimarães, Portugal.
48. N. Khakpour, R. Khosravi, M. Sirjani, S. Jalili, Formal Analysis of Policy-Based Self-Adaptive Systems, *Proceedings of SAC'10*, pp. 2536-2543, 2010.
47. N. Khakpour, S. Jalili, C. Talcott, M. Sirjani, M. M. Mousavi, PobSAM: Policy-based Managing of Actors in Self-Adaptive Systems, *Proceedings of FACS09*, *LNCS*, 2009
46. B. Pourvatan, M. Sirjani, H. Hojjat, F. Arbab, Automated Analysis of Reo Circuits using Symbolic Execution, *Proceedings of FOCLASA09*, *ENTCS*, 2009.
45. N. Khakpour, M. Sirjani and S. Jalili, Formal Analysis of Smart Home Policies using Compositional Verification , *Proceedings of ICFI'09*, 2009.

44. H. Hajabdolali Bazzaz, M. Sirjani, R. Khosravi, S. Taheri: Modeling Networking issues of Network-on-chip: a Coloured Petri nets Approach. *SimuTools 2009*: 22.
43. R. Behjati, M. Nili Ahmadabadi, M. Sirjani, Bounded Rational Search for On-the-fly Model Checking of LTL Properties, *Proceedings of FSEN'09*, Springer LNCS, Vol. 5961, pp. 292-307, 2009.
42. S. Tasharofi, M. Sirjani, Formal Modeling and Conformance Validation for WS-CDL using Reo and CASM, *Proceedings of FOCLASA '08*, Elsevier ENTCS post-proceedings, Vol. 229, Issue 2, 21 July 2009, Pages 155-174
41. F. Mahdikhani, M. R. Hashemi, M. Sirjani, QoS Aspects in Web Services Compositions, *Proceedings of The Fourth IEEE International Symposium on Service-Oriented System Engineering (SOSE 2008)*, 2008.
40. H. Sabouri, M. Sirjani, Slicing-based Reductions for Rebeca, *Proceedings of FACS'08*, Elsevier ENTCS post-proceedings, Vol. 260, pp. 209-224, 2010.
39. H. Hojjat, M. R. Mousavi, M. Sirjani, A Framework for Performance Evaluation and Functional Verification in Stochastic Process Algebra, pp. 339-346, ACM SAC 2008.
38. H. Hojjat, M. R. Mousavi, M. Sirjani, Process Algebraic Verification of SystemC Codes, pp. 62-67, IEEE ACSD 2008.
37. R. Behjati, H. Sabouri, N. Razavi, M. Sirjani, An Effective Approach for Model Checking SystemC Designs, pp. 56-61, IEEE ACSD 2008.
36. R. Khosravi, M. Sirjani, N. Asoudeh, S. Sahebi, H. Iravanchi, Modeling and Analysis of Reo Connectors using Alloy, LNCS 5052, pp. 169-183 , Coordination 2008.
35. M.M. Jaghoori, F. de Boer and M. Sirjani, Task Scheduling in Rebeca, *Proceedings of the 19th Nordic Workshop on Programming Theory (NWPT 2007)*, Oslo, Norway, pp. 16-18, October 2007.
34. N. Hakimipour, N. Razavi, M. Sirjani, Modeling and formal verification of hardware designs. *Proceedings of 5th IEEE East-West Design & Test Symposium (EWDTS 2007)*, 2007.
33. C. Talcott, M. Sirjani, S. Ren, Comparing Three Coordination Models: Reo, ARC, and RRD, *Proceedings of FOCLASA 2007*, ENTCS, vol. 194, no. 4, Pages 39-55, April 2008.
32. S. Tasharofi, M. Vakilian, R. Zilouchian Moghaddam, M. Sirjani, Modeling Web Services using Coordination Language Reo, *Proceedings of WS-FM07*, LNCS 4937 , pp. 108-123, 2007.

31. M. Sirjani, Rebeca: Theory, Applications and Tools, *Proceedings of FMCO'06*, LNCS 4709, pp. 102 -126, 2007.
30. F. AlaviZadeh, A. Hashemi-Nekoo, M. Sirjani, ReUML: a UML Profile for Modeling and Verification of Reactive Systems, *Proceedings of ICSEA'07*, 2007.
29. H. Hojjat, M. Sirjani, M. R. Mousavi, J. F. Groote: Sarir, A Rebeca to mCRL2 Translator, *Proceedings of. ACSD 2007*, IEEE, pp. 216-222, 2007.
28. N. Razavi, M. Sirjani: Compositional Semantics of System-Level Designs Written in SystemC, *Proceedings of FSEN 2007*, LNCS 4767, pp. 113-128, 2007.
27. M. R. Kakoe, H. Shojaei, H. Ghasemzadeh, Marjan Sirjani, Z. Navabi, A New Approach for Design and Verification of Transaction Level Models, *Proceedings of ISCAS 2007*, IEEE, pp. 3760-3763, 2007.
26. S. Tasharofi, S. Ansari, M. Sirjani, Generating Test Cases for Constraint Automata by Genetic Symbiosis Algorithm, *Proceedings of ICFEM 2006*, LNCS 4260, pp. 478-493, 2006.
25. N. Razavi, M. Sirjani, Using Reo for Formal Specification and Verification of System Designs, *Proceedings of MEMOCODE 2006*, IEEE, pp. 113-122, July 2006.
24. F. Alavizadeh, M. Sirjani, Using UML to Develop Verifiable Reactive Systems, *Proceedings of SERP'06*, June 2006.
23. M. Sirjani, M.M. Jaghoori, C. Baier, F. Arbab, Compositional Semantics of an Actor-Based Language using Constraint Automata, *Proceedings of Coordination 2006*, LNCS 4038, pp. 281-297, 2006.
22. F. Ghassemi, N. Nemat-Bakhsh, B. T. Ladani and M. Sirjani, A Formal Model for Organization of Multi-agent Systems, In *Proceeding of the Symposium on Information Technology Development*, Iran, 2005
21. F. Ghassemi, N. Nemat-Bakhsh, B. T. Ladani and M. Sirjani, Specification and Implementation of Multi-Agent Organizations, In *proceeding of Second International Conference on Web Information Systems and Technologies*, pp. 447-453, 2006, Portugal.
20. F. Ghassemi, N. Nemat-Bakhsh, B. T. Ladani and M. Sirjani, A Formal Model for Coordination Behavior of the Organization in Multi Agent Systems, In *proceeding of second International Conference on Information & Communication Technologies: from Theory to Applications*, Syria, IEEE, 2006.
19. M.R. Mousavi, M. Sirjani, F. Arbab, Formal Semantics and Analysis of Component Connectors in Reo, in *Proceedings of FOCLASA'05*, San Francisco, USA, August 2005, ENTCS 154(1), pp. 83-89, Elsevier Science, 2006.
18. H. R. Shahriari, M. Sadegh Makarem, M. Sirjani, R. Jalili and A. Movaghar, Modeling and Verification of Complex Network Attacks Using an Actor-Based

Language, *Proceedings of 11th Annual Int. CSI Computer Conference*, Tehran, Iran, pp. 152-158, January 2006.

17. F. Ghassemi, S. Tasharofi and M. Sirjani, Automated Mapping of Reo to Constraint Automata, In *Proceeding of the first International Conference on Fundamental of Software Engineering 2005*, pp. 99-115, Iran, ENTCS 159, Elsevier, 2006.

16. H. Hojjat, H. Nokhost, M. Sirjani, Formal Verification of the IEEE 802.1D Spanning Tree Protocol using Extended Rebeca, In *Proceeding of the first International Conference on Fundamental of Software Engineering 2005*, pp. 139-159, Iran, ENTCS 159, Elsevier, 2006.

15. M.M. Jaghoori, A. Movaghar and M. Sirjani, Modere: The Model-checking Engine of Rebeca, *Proceedings of the 21st Annual ACM Symposium on Applied Computing (SAC 2006)*, Dijon, France, pp. 1810-1815, April 2006.

14. M. M. Jaghoori, M. Sirjani, M. R. Mousavi, A. Movaghar, Efficient Symmetry Reduction for an Actor-Based Model. ICDCIT 2005, LNCS 3816, pp. 494-507, 2005.

13. M. Sirjani, , F.S. de Boer, A. Movaghar, A. Shali, Extended Rebeca: A Component-Based Actor Language with Synchronous Message Passing, in *Proceedings of ACSD 2005*, St. Malo, France, IEEE Computer Society, pp. 212-221, June 2005.

12. 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, *Proceedings of the 7th International Conference on Coordination Models and Languages (Coordination 2005)*, pp. 236-251, 2005.

11. M. Sirjani, A. Shali, M. M. Jaghoori, H. Iravanchi, and A. Movaghar, A Front-End Tool for Automated Abstraction and Modular Verification of Actor-Based Models, in *Proceedings of ACSD 2004*, Hamilton, Canada, pp. 145-148, IEEE Computer Society, June 2004.

10. N.R. Mehta, N. Medvidovic, M. Sirjani, and F. Arbab, Modeling Behavior in Compositions of Software Architectural Primitives, in *Proceedings of ASE 2004*, Austria, IEEE Computer Society, pp. 371-374, September 2004.

9. M. Sirjani, H. SeyedRazi, A. Movaghar, M. M. Jaghoori, S. Forghanizadeh, and M. Mojdeh, Model Checking CSMA/CD Protocol Using an Actor-Based Language, in *WSEAS Transactions on Circuit and Systems*, Issue 4, Vol. 3, 1052- 1057, June 2004.

8. F. Arbab, C. Baier, J.J.M.M. Rutten and M. Sirjani, Modeling Component Connectors in Reo by Constraint Automata, in *Proceedings of FOCLASA'03*, Marseille, France, ENTCS 97, pp. 25-46, Elsevier Science, 2004.

7. M. Sirjani, A. Movaghar, H. Iravanchi, M.M. Jaghoori and A. Shali, Model Checking in Rebeca, in Proceedings of The 2003 International Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA' 03), Las Vegas, USA, CSREA Press, pp. 1819-1822, June 2003.
6. M. Sirjani, A. Movaghar, H. Iravanchi, M.M. Jaghoori and A. Shali, Model Checking Rebeca by SMV, in Proceedings of the Workshop on Automated Verification of Critical Systems (AVoCS'03), University of Southampton, April 2003.
5. M. Sirjani and A. Movaghar, Simulation in Rebeca, in Proceedings of the 2002 International Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA' 02), Las Vegas, USA, CSREA Press, pp.923-926, June 2002.
4. M. Sirjani, A. Movaghar, An Object-Based Model for Agents, in Proceedings of Workshop on Agents for Information Management (EURASIA'02), Shiraz, Iran, Austrian Computer Society, October 2002.
3. S.H. Mirian-Hosseiniabadi and M. Sirjani, A Calculus for Real-Time Specification Statements, in Proceedings of the Workshop on Recent Progress in Computers and Communication (EURASIA'02), Shiraz, Iran, Austrian Computer Society, October 2002.
2. M. Sirjani and A. Movaghar, Simulation in Rebeca, in Proceedings of the Workshop on Automated Verification of Critical Systems (AVoCS'02), University of Birmingham, April 2002.
1. M. Sirjani, A. Movaghar, and M.R. Mousavi, Compositional Verification of an Actor-Based Model for Reactive Systems, in Proceedings of Workshop on Automated Verification of Critical Systems (AVoCS'01), Oxford University, April 2001.

Technical Reports:

- 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, <http://mehr.sharif.edu/~msirjani>, 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, <http://mehr.sharif.edu/~msirjani>, 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

- 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, Università 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:

- Special issue of Science of Computer Programming, for invited papers of FOCLASA09
- FOCLASA09 Proceedings, Elsevier ENTCS 255, (2009)
- Special issue of Science of Computer Programming, for invited papers of FSEN09
- FSEN09 Proceedings, LNCS 5961 (2009)
- Special issue of Science of Computer Programming, for invited papers of FOCLASA08
- FOCLASA08 Proceedings, Elsevier [ENTCS 229, Issue 2](#), (2009)
- Special issue in Fundamenta Informaticae (FI): Behavior 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:

- SC member of DisCoTec'12
 - PC chair of Coordination'12
 - General Chair of DisCoTec'11
 - PC member of ICFEM'11
 - PC member of ICTAC'11
 - PC member of FMICS'11
 - PC member of FACS'11
 - PC member of Coordination'11
 - PC Chair of FSEN'11
 - PC member of ICFEM'10
 - PC member of ICTAC'10
 - PC member of TAV-WEB-10
 - PC member of FOCLASA'10
 - PC member of Coordination'10
 - PC member of ICTAC'09
 - PC member of FACS'09
 - PC member of FM'09
 - PC Chair of FOCLASA'09
 - PC Chair of FSEN'09
 - PC Chair of FOCLASA'08
 - PC Chair of FSEN'07
 - PC member of ICFEM'07
 - PC member of WS-FM'06
 - PC Chair of FSEN'05
 - PC member of CSICC'05
-
- Organizing IPM-UNU Winter School on Foundations and Trends in Computer Science, Feb. 2008. <http://cs.ipm.ac.ir/ftcs08/>
 - Organizing the IPM-UT workshop on Processes: from Theory to Practice, July 2006. <http://khorshid.ece.ut.ac.ir/~acm/process/>
 - 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.

References:

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

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