

Shiva Nejati

Simula Research Laboratory
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Research Interests

My interests are in software engineering, and more specifically, in model-based software development. The goal of my research is to design and develop automated techniques for construction, management, and analysis of software models and to systematically evaluate these techniques using case studies and experiments.

My research draws on, and contributes to, many areas including behaviour analysis, specification and design methods, requirements engineering, globally distributed development, software verification, synthesis of real-time systems, model-based analysis of embedded systems, formal methods, web-services, automata theory, and logic.

Education

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|---|-------------------|
| University of Toronto , Toronto, Canada
Ph.D., Computer Science
Thesis: <i>Behavioural Model Fusion</i>
Supervisor: Prof. M. Chechik | 2003/09 – 2008/11 |
| University of Toronto , Toronto, Canada
M.S., Computer Science
Thesis: <i>Refinement Relations on Partial Specifications</i>
Supervisor: Prof. M. Chechik | 2002/01 – 2003/08 |
| Sharif University of Technology , Tehran, Iran
B.S., Software Engineering | 1996/09 – 2000/08 |

Working History

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|--|---|
| Research Scientist
Software Engineering Department,
Simula Research Laboratory | May 2009–present
Fornebu, Norway |
| Visiting Research Associate
Software Systems Engineering Group,
Department of Computer Science, University College London | January 2009–April 2009
London, UK |
| Graduate Research Assistant
Department of Computer Science, University of Toronto | January 2002–December 2008
Toronto, Canada |
| Projects: <i>Model Management</i> (2005–2008), <i>Software Model Checking</i> (2004–2005),
<i>Compositional Modeling Using Multi-Valued Logics</i> (2002–2004) | |
| Seasonal Instructor
Department of Computer Science, University of Toronto | May 2004–August 2004
Toronto, Canada |
| Course: <i>Software Design CSC207</i> | |
| Responsibilities included: <i>preparing and conducting lectures; supervising tutors and preparing tutorial notes; designing assignments and exams; grading exams; and holding office hours</i> | |

Teaching Assistant

Department of Computer Science, University of Toronto

January 2002–December 2008

Toronto, Canada

Graduate-Level and Cross-Listed Courses: *Model Checking CSC2108 (one time)*, *Software Architecture and Design CSC407 (four times)*, *Compiler Construction CSC488 (one time)*

Undergraduate-Level Courses: *Requirements Engineering CSC340 (four times)*, *Software Design CSC207 (four times)*, *Programming Languages CSC324 (two times)*, *The Why and How of Computing CSC181 (one time)*

Responsibilities included: *conducting tutorials; administering lab classes; grading assignments and exams; holding office hours; and other work as assigned*

Software Developer

The Farsi \TeX Project (<http://www.farsitex.org>),

Department of Computer Engineering, Sharif University of Technology

September 1999–December 2001

Tehran, Iran

Responsibilities included: the design and implementation of a *Farsi MakeIndex* tool; helping with the implementation of a markup editing environment for producing Farsi \TeX documents.

Honours and Awards

Marktoberdorf Summer School Scholarship	2008
◦ Value: 2,700 Euro	
Best Student Paper (CASCON'07)	2007
◦ Value: \$500 CDN	
Ontario Graduate Scholarship in Science and Technology (OGSST)	2007 – 2008
◦ Value: \$15,000 CDN	
ACM SIGSOFT Distinguished Paper (ICSE'07)	2007
SIGSOFT CAPS Travel Grant (ICSE'07, ICSE'08)	2007, 2008
◦ Value: \$1,100 USD	
Ontario Graduate Scholarship (OGS)	2006 – 2007
◦ Value: \$15,000 CDN	
University of Toronto Fellowship	2002 – 2008
◦ Value: \$19,000 CDN per year	

Professional Activities

- Conference Reviewer for FASE 2005, CONCUR 2005, LICS 2006, ASE 2006, VMCAI 2007, TACAS 2007, ASE 2007, ICSE 2008, MODELS 2009, and Journal of Information & Software Technology.
- Student Volunteer for ISMVL 2004, ICSE 2008, CONCUR/PODC 2008, and VSTTE 2008.
- Coordinator of the model management research group at the University of Toronto (2005 – 2007).
- Member of ACM SIGSOFT.

Publications

Refereed Journal Papers

1. J. Simmonds, Y. Gan, M. Chechik, **S. Nejati**, B. O'Farrell, E. Litani, J. Waterhouse. "Runtime Monitoring of Web Service Conversations". To appear in IEEE Transactions on Services Computing (TSC), 2009. 22 pages.

Refereed Conference Papers

1. **S. Nejati**, M. Sabetzadeh, M. Chechik, S. Uchitel, P. Zave. “Towards Compositional Synthesis of Evolving Systems”. In *16th International Symposium on the Foundations of Software Engineering (FSE’08)*, pages 285–296, Atlanta, GA, USA, November 2008. Acceptance rate: 20% (31/156). (Presenter)
2. M. Sabetzadeh, **S. Nejati**, S. Easterbrook, M. Chechik. “Global Consistency Checking of Distributed Models with TReMer+”. In *Proceedings of 30th International Conference on Software Engineering (ICSE’08)*, pages 815–818, Leipzig, Germany, May 2008. Formal Research Demonstration. Acceptance rate: 20% (18/88).
3. Y. Gan, M. Chechik, **S. Nejati**, J. Bennett, B. O’Farrell, J. Waterhouse. “Runtime Monitoring of Web Service Conversations”. In *Proceedings of the 2007 Conference of the Centre for Advanced Studies on Collaborative Research (CASCON’07)*, pages 42–57, Toronto, ON, Canada, October 2007. Acceptance rate: 27% (18/66). (**Best Student Paper Award**).
4. M. Sabetzadeh, **S. Nejati**, S. Liaskos, S. Easterbrook, M. Chechik. “Consistency Checking of Conceptual Models via Model Merging”. In *Proceedings of 15th IEEE International Requirements Engineering Conference (RE’07)*, pages 221–230, New Delhi, India, October 2007. Acceptance rate: 13% (22/172).
5. **S. Nejati**, M. Sabetzadeh, M. Chechik, S. Easterbrook, P. Zave. “Matching and Merging of Statecharts Specifications”. In *Proceedings of 29th International Conference on Software Engineering (ICSE’07)*, pages 54–64, Minneapolis, MN, USA, May 2007. Acceptance rate: 15% (49/334). (**ACM SIGSOFT Distinguished Paper Award**). (Presenter)
6. **S. Nejati**, M. Gheorghiu, M. Chechik. “Thorough Checking Revisited”. In *Proceedings of 6th International Conference on Formal Methods in Computer-Aided Design (FMCAD’06)*, pages 106–116, San Jose, CA, USA, November 2006. Acceptance rate: 23% (21/90). (Presenter)
7. **S. Nejati**, M. Chechik. “Let’s Agree to Disagree”. In *Proceedings of 20th IEEE/ACM International Conference on Automated Software Engineering (ASE’05)*, pages 287–290, Long Beach, CA, USA, November 2005. Short Paper. Acceptance rate: 21% (28+35/291). (Presenter)
8. **S. Nejati**, A. Gurfinkel, M. Chechik. “Stuttering Abstraction for Model Checking”. In *Proceedings of 3rd IEEE International Conference on Software Engineering and Formal Methods (SEFM 2005)*, pages 311–320, Koblenz, Germany, September 2005. Acceptance rate: 33% (40/120). (Presenter)

Refereed Workshop Papers

1. M. Chechik, W. Lai, **S. Nejati**, J. Cabot, Z. Diskin, S. Easterbrook, M. Sabetzadeh, R. Salay. “Relationship-Based Change Propagation: A Case Study”. In *Proceedings of ICSE Workshop on Modeling in Software Engineering (MiSE’09)*, Vancouver, BC, Canada, May 2009. 6 pages. Acceptance rate: 44% (11/25). (To Appear)
2. **S. Nejati**, M. Chechik. “Behavioural Model Fusion: An Overview of Challenges”. In *Proceedings of ICSE Workshop on Modeling in Software Engineering (MiSE’08)*, Leipzig, Germany, May 2008. 6 pages. Acceptance rate: 43% (13/30).
3. J. Simmonds, M. Chechik, **S. Nejati**, E. Litani, B. O’Farrell. “Property Patterns for Runtime Monitoring of Web Service Conversations”. In *Proceedings of ETAPS Workshop on Runtime Verification (RV’08)*, Budapest, Hungary, March 2008. 18 pages. Acceptance rate: 33% (9/27).
4. R. Salay, M. Chechik, S. Easterbrook, Z. Diskin, **S. Nejati**, M. Sabetzadeh, P. McCormick, P. Viriyakattiyaporn. “An Eclipse-Based Model Management Framework”. In *Proceedings of OOPSLA Workshop on Eclipse Technology eXchange (ETX’07)*, Montréal, QC, Canada, November 2007. 6 pages.

5. M. Sabetzadeh, **S. Nejati**, S. Easterbrook, M. Chechik. “A Relationship-Driven Framework for Model Merging”. In *Proceedings of ICSE Workshop on Modeling in Software Engineering (MiSE'07)*, Minneapolis, MN, USA, May 2007. 6 pages. Acceptance rate: 45% (12/27).
6. G. Brunet, M. Chechik, S. Easterbrook, **S. Nejati**, N. Niu, M. Sabetzadeh. “A Manifesto for Model Merging”. In *Proceedings of ICSE Workshop on Global Integrated Model Management (GaMMa'06)*, Shanghai, China, May 2006. 7 pages.

Doctoral Symposium

1. **S. Nejati**. “Formal Support for Merging and Negotiation”. In *Proceedings of 20th IEEE/ACM International Conference on Automated Software Engineering (ASE'05)*, pages 456–460, Long Beach, CA, USA, November 2005. 4 pages. Acceptance rate: 46% (6/13).

Other Refereed Contributions

1. M. Chechik, S. Easterbrook, R. Salay, Z. Diskin, M. Sabetzadeh, **S. Nejati**, P. McCormick, P. Viriyakattiyaporn “An Eclipse-Based Tool Framework for Software Model Management”. *Tool and Poster Track of 2007 Conference of the Centre for Advanced Studies on Collaborative Research (CASCON'07)*, Toronto, ON, Canada, October 2007.
2. M. Sabetzadeh, **S. Nejati**, S. Easterbrook, M. Chechik. “A Relationship-Driven Approach to View Merging”. *Poster Track of the 14th ACM SIGSOFT Symposium on Foundations of Software Engineering (FSE'06)*, Portland, OR, USA, November 2006.
3. M. Sabetzadeh, **S. Nejati**, S. Easterbrook, M. Chechik. “TReMer: A Tool for Relationship-Driven Model Merging”. *Tools and Posters Track of Formal Methods 2006 (FM'06)*, Hamilton, ON, Canada, August 2006. Also presented in *CASCON'06 and CSER'06*, Toronto, ON, Canada, October 2006.
4. **S. Nejati**, A. Gurfinkel. “Stuttering Refinement on Partial Systems”. In *Proceedings of 18th IEEE Symposium on Logic in Computer Science (LICS'03)*, Ottawa, ON, Canada, June 2003. Short Presentation.

Theses and Technical Reports

1. **S. Nejati**. “Behavioural Model Fusion”. Ph.D. Thesis, Department of Computer Science, University of Toronto, Canada, November 2008.
2. **S. Nejati**, M. Sabetzadeh, M. Chechik, S. Easterbrook. “Identifying and Representing Requirements Variability in Families of Reactive Software”. Technical Report CSRG-538, Department of Computer Science, University of Toronto, Canada, February 2006.
3. **S. Nejati**, “Abstraction for Software Model Checking”. Report for Depth Oral, Department of Computer Science, University of Toronto, Canada, April 2005.
4. **S. Nejati**, “Refinement Relations on Partial Specifications”. Master’s Thesis, Department of Computer Science, University of Toronto, Canada, August 2003.

In Preparation

1. **S. Nejati**, M. Sabetzadeh, M. Chechik, S. Easterbrook, P. Zave. “Matching and Merging of Statecharts Specifications”. (journal)
2. M. Sabetzadeh, **S. Nejati**, S. Easterbrook, M. Chechik. “Consistency Checking of Conceptual Models via Model Merging”. (journal)

Software

- TReMer+: A Tool for Merging and Consistency Checking of Distributed Models. Available from <http://se.cs.toronto.edu/index.php/TReMer+>

Invited Talks

1. *Behavioural Model Fusion: Merge, Composition and Verification*, Simula Research Lab, Lysaker, Norway, May 2009; University of Lugano, Lugano, Switzerland, April 2009; Open University, Milton Keynes, UK, March 2009; University College London, London, UK, February 2009; Oregon State University, Corvallis, OR, USA, January 2009; University of Calgary, Calgary, AB, Canada, December 2008; IBM Research – Watson Research Center (Hawthorne), New York, USA, October 2008.
2. *On the Use of Approximate Equivalences in Model-Based Development*, Invited to the Workshop on Approximate Behavioural Equivalences (ABE08), co-located with CONCUR08, Toronto, Canada, August 2008.
3. *Matching and Merging of Statecharts Specifications*, Invited to the 1st India Software Engineering Conference (ISEC 2008), Hyderabad, India, February 2008. (Declined).
4. *Matching and Merging of Statecharts Specifications*, University of Toronto Variability Modelling Workshop, Toronto, Canada, December 2006.
5. *Matching and Merging of Statecharts Specifications*, York University, Toronto, Canada, December 2006. Host: Prof. Franck van Breugel.
6. *Merging Variant State-Machine Specifications*, University of Toronto Model Management Workshop, Toronto, Canada, August 2006.
7. *Formal Support for Merging and Negotiation*, University of Toronto Model Checking Day, Toronto, Canada, July 2005.

Students Supervised

- Winnie Lai Master Student at the University of Toronto
Thesis: Relationship-Based Change Propagation: A Case Study – Graduation: February 2009
- Min Soo Kim Undergraduate Student at the University of Toronto
Project: Design of a Wiki Site for Software Engineering Group at UofT – Summer 2007
- Yuan An Master Student at the University of Toronto
Thesis: Runtime Monitoring of Web Service Conversations – Graduation: March 2007

Personal Information

Nationality: Canadian and Iranian