Nasim Beigi-Mohammadi

Curriculum Vitae

Highlights

2020	Nominated for Department Best Thesis Award
2019	Nominated for York University Governor General's Gold Medal
2017	First prize winner, TELUS/Juniper SDN programming challenge
2017	Lassonde School of Engineering Award (L'OSCAR)
2016	Recipient of NSERC Alexander Graham Bell Canada Graduate Scholarships - Doctoral (CGSD)
2016	Recognized for research funding achievements at York University [News]
2016	Recipient of Ontario Graduate Scholarship (OGS) (Declined in favour of CGS D)
2016	Top Vanier Scholarship nominee in Computer Science and Engineering at York University for the national competition
2016	Student Travel Grant in International Conference on Network and Service Management (CNSM)
2015	Recipient of Ontario Graduate Scholarship (OGS)
2013	Ryerson Graduate Award for Academic Excellency
2012	Ryerson Graduate Award for Productivity and Success in Computer Science
2011 – now	Extensive hands-on experience with cutting-edge computation and communication technologies
2011 – now	Strong track record in student supervision and leadership
2011 – now	Publications in top-tier conferences and journals in the area of network and service management and autonomic computing [Google scholar]
2011 – now	Applied research and strong tie to various industry sectors
2011 – 2020	A^+ GPA in both PhD and MSc

Positions

2023 – now	**Postdoctoral Fellow**, *Department of Electrical and Computer Engineering, University of Toronto*, Toronto, Canada.
2021 – 2023	**Leave of Absence**.
2020 – 2021	**Postdoctoral Fellow**, *Department of Electrical and Computer Engineering, University of Toronto*, Toronto, Canada.

Education

2015 – 2020	**PhD in Computer Science**, *York University*, Toronto, Canada, Thesis: Engineering Self-Adaptive Applications on Software-Defined Infrastructure, GPA: A$^+$. `Maternity leave (June 2018 - September 2019).`
2011 – 2013	**M.Sc. in Computer Science**, *Toronto Metropolitan University*, Toronto, Canada, Thesis: An Intrusion Detection System for Smart Grid Neighbourhood Area Network, GPA: A$^+$.
2004 – 2008	**B.Sc. in Computer Engineering**, *Shahed University*, Tehran, Iran, Thesis: Intelligent Transportation Systems, Bus Rapid Transport (BRT) Modeling, Thesis Grade: 19.86/20.
2000 – 2004	**Diploma in Math and Physics**, *National Organization for Development of Exceptional Talents (NODET)*, Iran, GPA: A$^+$.

Research Interests

- Self-adaptive Software Systems
- Cloud Computing
- Knowledge Representation
- Software-defined Networks
- Applied Machine Learning
- Data-driven Software Management

Publications

Peer Reviewed Journals

– Hongxiang Geng, **Nasim Beigi-Mohammadi**, and Alberto Leon-Garcia, *Predicting City-wide Traffic using Privacy-preserving Network Activity Data*, submitted to IEEE Open Journal of Intelligent Transportation Systems, November 2024.

– Dilli Sharma, **Nasim Beigi-Mohammadi**, and Alberto Leon-Garcia, *Statistical and Machine Learning Models for Predicting Fire and Other Emergency Events in the City of Edmonton*, IEEE Access, April 2024.

– Kristina Dzeparoska, **Nasim Beigi-Mohammadi**, Ali Tizghadam, and Alberto Leon-Garcia, *Towards a Self-Driving Management System for the Automated Realization of Intents*, IEEE Access, 2022.

– **Nasim Beigi-Mohammadi**, Mark Shtern, and Marin Litoiu, *Adaptive Load Management of Web Applications on Software Defined Infrastructure*, IEEE Transaction on Network and Service Management, October 2020. (**Imapct Factor: 4.68**).

- Hamzeh Khazaei, Marios Fokaefs, Saeed Zareian, **Nasim Beigi-Mohammadi**, Brian Ramprasad, Mark Shtern, Purwa Gaikwad and Marin Litoiu, *How Do I Choose the Right NoSQL Solution? A Comprehensive Theoretical and Experimental Study*, Journal of Big Data and Information Analytics (BDIA), December 2015.
- **Nasim Beigi-Mohammadi**, Jelena Misic, Vojislav B. Misic and Hamzeh Khazaei, *A Framework for Intrusion Detection System in Advanced Metering Infrastructure*, Wiley Journal of Security and Communication Networks 2012.
- **Nasim Beigi-Mohammadi**, Hamzeh Khazaei, Jelena Misic, Vojislav B. Misic, *On Intrusion Detection in a Neighbourhood Area Network in the Smart Grid*, Journal of Information Technology and Applications(JITA), Vol. 2, No. 1, June 2012.

Peer Reviewed Conferences

- **Nasim Beigi-Mohammadi**, Marin Litoiu, Mahsa Taba, Ladan Tahvildari, Marios Fokaefs, Ettore Merlo, Vio Onut, *A DevOps Framework for Quality-Driven Self-Protection in Web Software Systems*, International Conference on Software Engineering and Computer Science, October 2018.
- **Nasim Beigi-Mohammadi**, Mark Shtern, Marin Litoiu, *A Model-based Application Autonomic Manager with Fine Granular Bandwidth Control*, IEEE International Conference on Network and Service Management (CNSM), Novomber 2017.
- **Nasim Beigi-Mohammadi**, Hamzeh Khazaei, Mark Shtern, Cornel Barna, and Marin Litoiu, *Implementation of Self-Managing Applications on Cloud Using Overlay Networks*, IEEE International Symposium on Integrated Network Management (IM), May 2017.
- **Nasim Beigi-Mohammadi**, Hamzeh Khazaei, Mark Shtern, Cornel Barna, and Marin Litoiu, *An Adaptive Service Management of Cloud Applications Using Overlay Networks*, IEEE International Symposium on Integrated Network Management (IM), May 2017(**Acceptance rate: 16%***).
- **Nasim Beigi-Mohammadi**, and Marin Litoiu. *Engineering Self-Adaptive Applications on Cloud with Software Defined Networks*, 2017 IEEE International Conference on Cloud Engineering (IC2E) Doctoral Symposium, April 2017.
- **Nasim Beigi-Mohammadi**, Cornel Barna, Mark Shtern, Hamzeh Khazaei, and Marin Litoiu. *CAAMP: Completely Automated DDoS Attack Mitigation Platform in Hybrid Clouds*, IEEE International Conference on Network and Service Management (CNSM), October 2016 (**Acceptance rate: 14.65%**).
- Hamzeh Khazaei, Cornel Barna, **Nasim Beigi-Mohammadi** and Marin Litoiu, *Provisioning Performance of Cloud Microservices Platforms*, 8th IEEE International Conference on Cloud Computing Technology and Science (CloudCom), December 2016 (**Acceptance rate: 22%**).
- **Nasim Beigi-Mohammadi**, Hamzeh Khazaei, Mark Shtern, Cornel Barna and Marin Litoiu. *On Efficiency and Scalability of Software Defined Infrastructure for Adaptive Applications*, The 13th IEEE International Conference on Autonomic Computing (ICAC), July 2016 (**Acceptance rate: 25%**).

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* The acceptance rates that are known are provided here.

- **Nasim Beigi-Mohammadi**, Jelena Misic, Hamzeh Khazaei, and Vojislav B. Misic, *An Intrusion Detection System for Smart Grid Neighborhood Area Network*, IEEE ICC, June 2014.
- Hamzeh Khazaei, Jelena Misic, Vojislav B. Misic, and **Nasim Beigi-Mohammadi**, *Modeling the Performance of Heterogeneous IaaS Cloud Centers*, 3rd international workshop on Data Center Performance, July 2013.
- Hamzeh Khazaei, Jelena Misic, Vojislav B. Misic and **Nasim Beigi-Mohammadi**, *Availability Analysis of Cloud Computing Centers*, IEEE Globecom 2012.

Books and Book Chapters

- **Nasim Beigi-Mohammadi**, *Smart Meter Networks: Intrusion Detection System by Design*, LAP Lambert Academic Publishing, 2014, ISBN-10: 365954082X ([Book](#)).
- **Nasim Beigi-Mohammadi**, Jelena Misic, Vojislav B. Misic, and Hamzeh Khazaei, *Intrusion Detection System for Machine-to-Machine Communication in Smart Grid*, Book Chapter in Machine-to-Machine Communications: Architectures, Technology, Standards, and Applications, CRC Press, 2014, ([Book Chapter](#)).

Technical Reports

- K. Chadha, T. Kuga, B. Guan, W. Jin, **Nasim Beigi-Mohammadi**, Y. He, J. Misic, and L. Guan, *Secure and Reliable Data Communications for Smart Grid*, Toronto Hydro-Electric System LTD-Center for Urban Energy, Ryerson University, 2012.

Demos and Posters

- **Nasim Beigi-Mohammadi**, Mark Shtern, Marin Litoiu, Joe Wigglesworth, and Radu Mateescu, A Machine Learning Based Application Autonomic Management System on Software Defined Networks, IBM CASCON Exhibition, November 2017.
- **Nasim Beigi-Mohammadi**, Cornel Barna, Mark Shtern, Marin Litoiu, Joe Wigglesworth, and Radu Mateescu, CAAMP: Completely Automated DDoS Attack Mitigation Platform in Hybrid Clouds, IBM CASCON Technology Showcase, October 2016.
- **Nasim Beigi-Mohammadi**, Mark Shtern, Cornel Barna, Marin Litoiu,Overload Management for Busy Multi-tier Web Applications Using Software Defined Networking, SAVI AGM, July 2016.
- **Nasim Beigi-Mohammad**i, Cornel Barna, Mark Shtern, Marin Litoiu, OpenFlow-enabled DDoS Attack Mitigation on Hybrid Cloud, demonstrated and presented in SAVI AGM, July 2015.

Teaching

Instructor

Winter 2018 Introduction to Foundations of Computing II (CMPUT 175), Department of Computing Science, University of Alberta

Teaching Assistants

Fall 2016 Computational Thinking Through Mechatronics (EECS1011), York University

Fall 2015 Computer Use Fundamentals (EECS 1520), York University

Fall 2014	User Interfaces (EECS 3461), York University
Fall 2012	Introduction to Data Communications (CPS706), Ryerson University
Spring 2012	Digital Computation and Programming (CPS125), Ryerson University
Fall 2011	Computer Organization (CPS213), Ryerson University

Industry Projects

2023 – now	SafeCity: Applications of statistical modeling and artificial intelligence for improved quality of response in Edmonton Fire and Rescue Services (EFRS), EFRS, Telus Mobility, and University of Toronto, Toronto, Canada
2014 – 2015	Secure Enterprise Customer Virtual Service Management using Contrail SDN and OpenStack, TELUS Center, Toronto, Canada
2011 – 2013	Secure and Reliable Data Communications for Smart Grid, Toronto Hydro-Electric System Limited (THESL), Toronto, Canada
2011 – 2012	Network Integration for M2M Communication in Industrial Process Control, More Automation Solutions Inc., Toronto, Canada

Mentorship

UofT	Dilli Sharma (Postdoc)
UofT	Zichun Chong (MEng)
UofT	Zihang Huang (MEng)
UofT	Hongxiang Geng (MSc)
UofT	Cindy Liu (Intern)
UofT	Shawn Zhai (Intern)
UofT	Ghamr Saeed (Undergrad)
UofT	Lindy Zhai (Undergrad)
UofT	Grace Huan Liu(Undergrad)
UofT	Amily Wu(Undergrad)
UofT	Kristina Dzeparoska (PhD)
YorkU	Yar Rouf (MSc)
YorkU	Ali Zargar Shabestari (MSc)

Skills and Tool Set

- Data Science: Pytorch Geometric, ElasticSearch, Scikit-learn, Stardog, Protege
- Cloud computing: Kubernetes, Docker, OpenStack, Amazon Web Services (AWS)
- SAP S/4HANA Cloud
- Programming Languages: Python, Java, C, C++
- Data Communication, Security Standards and Packages: OpenFlow, P4, Open Virtual Switch (OVS), Ryu SDN Framework, Mininet, IEEE 802.11(i), 802.16e, 802.15.4/Zigbee, 802.11s, IP Security (IPSec), PKI, Wireshark
- Simulation: OPNET, Artifex

Professional and Voluntary Services

2024   Publicity chair in 16th ACM/SPEC International Conference on Performance Engineering (ICPE)

2023   PC Member in the 3rd Workshop on Software Techniques for Engineering Cyber-Physical Systems

2019   PC Member in the Eighth International Workshop on Load Testing and Benchmarking of Software Systems, Co-located with ICPE 2020

2016 – 2017   Member of Executive Committee of the York University IEEE Women in Engineering (WIE) chapter

2017   Organizer of Lassonde Graduate Studies Open House, York University

2016   PC Member in International Workshop on Security, Privacy and Reliability of Smart Buildings

2012 – now   Peer Reviewer for Elsevier Journal of Information Security and Applications, Wiley Communication and Security Journal, International Conference on Distributed Computing Systems, Springer EURASIP Journal on Wireless Communications and Networking, IEEE Open Journal of Intelligent Transportation Systems, ACM/SPEC International Conference on Performance Engineering, IEEE Transactions on Cloud Computing, IEEE Transactions on Network and Service Management, International Journal of Network Management, IEEE International Conference on Communications, IFIP/IEEE Symposium on Integrated Network and Service Management.

Oral Presentations and Demonstrations

2019   Self-adaptive Systems, Ontario Tech University, Faculty of Business and Information Technology, Faculty Seminar, Oshawa, Canada

2017   Demonstration of Adaptive Service Management using Overlay Networks, IEEE IM 2017 Demonstration, Lisbon, Portugal

2017   A Machine Learning Based Application Autonomic Management System on Software Defined Networks, Demonstration in IBM CASCON Technology Showcase

2016   CAAMP: Completely Automated DDoS Attack Mitigation Platform in Hybrid Clouds, Demonstration in IBM CASCON Technology Showcase

2015   Customer Service Management Portal Utilizing Contrail SDN/NFV and OpenStack Orchestration, TELUS/Juniper Networks SDN Workshop and Competition, Toronto, Canada

2015   Demonstration of An OpenFlow-enabled DDoS Mitigation Platform on Hybrid Clouds, SAVI Annual General Meeting and Workshop, Toronto, Canada

2014   Prevention and Mitigation of Security Attacks Using Scalable Module-based Virtual Machines, demonstration in SAVI Design Camp, Toronto, Canada

2013   Cyber Security Considerations in Toronto Hydro Smart Grid Project. Ryerson Centre for Urban Energy- Projects Closing Remarks Session with Ontario Minister of Energy, Toronto, Canada

2012   Secure Machine-to-Machine Communication in Wireless Networks. Ryerson University Seminar on Advanced Computer Science Studies, Toronto, Canada

Course Work

York University

– Engineering Self-Adaptive Systems: A^+
– Quantitative System Performance: A^+
– High-Performance Computer Networks: A
– Wireless Communications: Design and principles: A^+
– Advanced topics in Information Security: A^+

Ryerson University

– Secure Computing: A^+
– Soft Computing and Machine Intel.: A^+
– Sensor Networks (Directed studies): A^+
– Computer Networks: A^+
– Visualization: A^+