

Koosha Marashi

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Education

Missouri University of Science and Technology (Missouri S&T)

Rolla, MO

PH.D. IN COMPUTER ENGINEERING

Aug. 2012 – Jul. 2017

- **Dissertation:** Quantitative Dependability and Interdependency Models for Cyber-Physical Systems
- **Advisor:** Dr. Sahra Sedigh Sarvestani
- **GPA:** 3.8/4.0

Missouri University of Science and Technology (Missouri S&T)

Rolla, MO

GRADUATE CERTIFICATE IN COMPUTATIONAL INTELLIGENCE

Aug. 2012 – May 2017

Isfahan University of Technology (IUT)

Isfahan, Iran

B.S. IN ELECTRICAL ENGINEERING

Sep. 2006 – Feb. 2011

- **GPA:** 15.61/20.00

Work Experience

Romeo Power Technology

Los Angeles, CA

SENIOR EMBEDDED SOFTWARE ENGINEER

Oct. 2017 – Present

- Developed software requirements for a highly configurable battery management system with ISO-26262 and UL-1998 compliance.
- Led development of software architecture and design for a battery management system that complies with recognized functional and non-functional requirements.
- Designed and implemented a distributed control and decision making platform for decentralized battery management systems to improve fault tolerance and extendability.
- Performed research on battery control and state estimation algorithms, published several internal articles, and proposed improvements.
- Helped in code review process of embedded system software development for safety critical applications.

Missouri S&T, Department of Electrical and Computer Engineering

Rolla, MO

GRADUATE RESEARCH ASSOCIATE

Aug. 2017 – Oct. 2017

- Assisted with research duties related to dependability modeling of critical infrastructure, including preparation of manuscripts, verification and validation of simulations, and sanity-checking of mathematical models.

Missouri S&T, Department of Electrical and Computer Engineering

Rolla, MO

GRADUATE RESEARCH ASSISTANT

Aug. 2016 – May 2017

Aug. 2015 – May 2016

Aug. 2014 – May 2015

Aug. 2012 – May 2014

- Developed reliability, survivability, and interdependency models for the critical infrastructure. These analytical models help in identifying vulnerabilities and reducing service interruptions in different systems such as the modern electrical grid.

Intellispeak LLC

Lawrence, KS

SOFTWARE/FIRMWARE DEVELOPMENT INTERN

May 2016 – Aug. 2016

- Reduced power consumption of a UAV navigation system to one thirtieth of its original value and improved its performance by 40% by migrating to a Linux-powered single-board computer and utilizing optimized algorithms.

Intellispeak LLC

Lawrence, KS

FULL-STACK DEVELOPMENT INTERN

May 2015 – Aug. 2015

- Utilized Bluetooth beacons and constructed an information network to help patients with autism.
- Designed several test cases to identify and debug issues
- Responsible for development of server back-end (Python), Android app (Java), database (MySQL), and web interface (HTML, JavaScript, and CSS).

Intellispeak LLC

SOFTWARE/FIRMWARE DEVELOPMENT INTERN

Lawrence, KS

May 2014 – Aug. 2014

- Developed an automated air-band radio for UAVs. This system is able to predict intent of UAVs with 98% accuracy and inform nearby traffic.

Beh-Azmoon

FIRMWARE ENGINEER

Isfahan, Iran

Dec. 2011 – Jun. 2012

- Created a wireless digital crack monitoring system for structural health monitoring. This system can replace traditional crack gauges and eliminate the need for constant surveillance.

IUT, Department of Electrical and Computer Engineering

RESEARCH ASSISTANT

Isfahan, Iran

Feb. 2006 – Nov. 2011

- Developed a navigation and mapping system for LynCean mobile robot by applying sensor fusion algorithms on data from a laser scanner, a GPS receiver, sonar sensors, and IR detectors.
- Made a multi-functional stand-alone data logger.
- Made a controller board for Parsa humanoid robot.
- Prototyped an AUTOSAR-compliant engine control unit for Honda GX35 engine.

Leadership Activities

Romeo Power Technology

SR. EMBEDDED SOFTWARE ENGINEER

Los Angeles, CA

Oct. 2017 – Present

- Led a team of eight software engineers in achieving goals pertaining to development of software architecture and design.

Eta Kappa Nu Honor Society - Gamma Theta Chapter

ACTIVE MEMBER

Rolla, MO

Mar. 2014 – Present

- Attended regular meetings and helped in voluntary services.

Super-mileage Car Student Design Team

HARDWARE DEVELOPMENT LEADER

Isfahan, Iran

Oct. 2009 – Aug. 2010

- Communicated status and issues to cross-functional teams and senior manager.
- Coordinated resources using Microsoft Project.

Rescue Robot Student Design Team

TEAM LEADER

Isfahan, Iran

Sep. 2008 – Apr. 2009

- Mentored students, helping them to solve problems and make decisions.

Publications

JOURNAL PAPERS

- **K. Marashi**, S. Sedigh, and A. Hurson, "Identification of Interdependencies and Prediction of Fault Propagation for Cyber-Physical Systems," *Reliability Engineering & System Safety*, submitted.
- M. Woodard, **K. Marashi**, and S. Sedigh, "Survivability Evaluation and Importance Analysis for Complex Networked Systems," *IEEE Transactions on Sustainable Computing*, under review.
- N. Jarus, M. Woodard, **K. Marashi**, A. Faza, J. Lin, P. Maheshwari, and S. Sedigh, "Survey on Modeling and Design of Cyber-Physical Systems," *ACM Transactions on Cyber-Physical Systems*, under review.
- **K. Marashi**, S. Sedigh, and A. Hurson, "Consideration of Cyber-Physical Interdependencies in Reliability Modeling of Smart Grids," *IEEE Transactions on Sustainable Computing*, vol. 3, no. 2, 2018.
- **K. Marashi**, M. Woodard, S. Sedigh, and A. Hurson, "Quantitative Reliability Analysis for Intelligent Water Distribution Networks," *Transactions of the American Nuclear Society*, 2013.

CONFERENCE PAPERS

- **K. Marashi**, S. Sedigh, and A. Hurson, "Quantification and Analysis of Interdependency in Cyber-Physical Systems," *In Proceedings of the 46th Annual IEEE/IFIP International Conference on Dependable Systems and Networks Workshops*, Toulouse, France, Jun. 2016.
- **K. Marashi** and S. Sedigh, "Towards Comprehensive Modeling of Reliability for Smart Grids: Requirements and Challenges," *In Proceedings of the 15th IEEE International Symposium on High-Assurance Systems Engineering (HASE)*, pp. 105-112, Miami, FL, Jan. 2014. Selected for

appearing in 2nd issue of 2015 Science of Security Newsletter.

- **K. Marashi**, M. Woodard, S. Sedigh, and A. Hurson, "Quantitative Reliability Analysis for Intelligent Water Distribution Networks," *In Proceedings of the Risk Management for Complex Socio-Technical Systems*, Washington, D.C., Nov. 2013.

Honors and Awards

2013	National University Transportation Center Fellowship , US Department of Transportation	Rolla, MO
2013	Travel Scholarship , Trustworthy Cyber Infrastructure for the Power Grid	Urbana, IL
2012	Vice-Provost for Graduate Studies Fellowship , Missouri S&T	Rolla, MO
2010	Gold Medal , 38 th Geneva Invention Exhibition	Geneva, Switzerland
2010	Best Invention Award , Russian Incubator of Inventions	Geneva, Switzerland
2009	Outstanding Undergraduate Researcher Award , IUT	Isfahan, Iran

Patents

2009	2D Wireless Structural Crack Monitoring System , Pat. No. IR-62181
2009	Life Detector Robot with Adjustable Functionality , Pat. No. IR-60845
2009	Extendable DC Motor Controller System , Pat. No. IR-60839
2009	An Innovative Co-Axial Rotation Mechanism , Pat. No. IR-60847
2009	Robust Track Mechanism for Locomotion of Mobile Robots , Pat. No. IR-60849
2009	Lightweight Robust Platform for Mobile Robots , Pat. No. IR-60848

Professional Activities

2019	Program Committee Member , International Conference on Wireless Networks and Mobile Systems (WINSYS)
2019	Reviewer , Advances in Computers
2018	Reviewer , IEEE Green Technologies Conference (GREENTECH)
2017	Reviewer , Springer Journal of Computing
2016	Reviewer , Journal of Mathematics and Computer Science
2016	Reviewer , IEEE International Computers, Software & Applications Conference (COMPSAC)
2015	Reviewer , IEEE International Computers, Software & Applications Conference (COMPSAC)
2014	Reviewer , IEEE International Green Computing Conference (IGCC)
2014	Reviewer , IEEE International Symposium on High Assurance Systems Engineering (HASE)
2014	Reviewer , IEEE International Conference on Software Security and Reliability (SERE)
2013	Reviewer , IEEE International Conference on Software Security and Reliability (SERE)

Professional Development

2019	ISO 26262 Training: Functional Safety Management System , Omnex	Vernon, CA
2017	Student Leadership Conference , Missouri S&T	Rolla, MO
2014	Graduate Teaching Assistant Workshop , Missouri S&T	Rolla, MO
2014	Research & Technology Development Conference , Missouri S&T	Rolla, MO
2014	Transportation Infrastructure Conference , Missouri S&T	Rolla, MO
2014	IEEE/Ameren Lean Fundamentals Workshop , Ameren	St. Louis, MO
2014	Presenting Data and Information by Edward Tufte , Fairmont Chicago	Chicago, IL
2013	IEEE Seminar on Modeling Cyber Attack-Defense Interactions , Missouri S&T	Rolla, MO
2013	Engineering Management & Systems Engineering Seminar on Applications and Future Directions of Computational Intelligence , Missouri S&T	Rolla, MO
2013	Transportation Infrastructure Conference , Capitol Plaza Hotel	Jefferson City, MO
2013	Trustworthy Cyber Infrastructure for the Power Grid (TCIPG) Summer School , Q Center	St. Charles, IL

Professional Society Membership

Since 2015	Student Member , National Society of Professional Engineers
Since 2015	Member , ACM - SIGMETRICS
Since 2015	Student Member , ACM
Since 2014	Member , IEEE - Eta Kappa Nu
Since 2013	Student Member , IEEE

Technical Skills

Programming Languages	C, C++, Python, SQL, Java
Web Technologies	HTML, JavaScript, CSS, Bottle, RESTful API, Jekyll, Amazon AWS/EC2
Computer Software	MATLAB & Simulink, LabVIEW (CLAD certificate, issued 5/13), OrCAD, LaTeX
Data Analysis	Machine learning, Neural networks, Statistical modeling, Regression, ANOVA, TensorFlow, SAS, JMP
Programmable Devices	ARM-based Microcontrollers
Communication Protocols	CAN, UART, SPI, I ² C, TCP/IP, ZigBee, Bluetooth
Operating Systems	Windows, Linux (Ubuntu, Red Hat, Raspbian), Android
Miscellaneous	Git, JIRA, Confluence, Continuous integration, Circuit design, PCB design, Android app development