

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 – July 2017

- **Dissertation:** Quantitative Dependability and Interdependency Models for Cyber-Physical Systems
- **Advisor:** Dr. Sahra Sedigh Sarvestani
- **GPA:** 3.83/4.0

Isfahan University of Technology (IUT)

Isfahan, Iran

B.S. IN ELECTRICAL ENGINEERING

Sep. 2006 – Feb. 2011

- **GPA:** 15.61/20

Work Experience

Missouri S&T, Department of Electrical and Computer Engineering

Rolla, MO

GRADUATE RESEARCH ASSISTANT

Aug. 2012 – Present

- Developed reliability and survivability models for critical infrastructures.
- Proposed a model for analysis of interdependencies in cyber-physical systems.

Kalscott Eng.

Lawrence, KS

SOFTWARE/HARDWARE DEVELOPMENT INTERN

May 2016 – Aug. 2016

- Worked on an automated air-band radio for UAVs. Main tasks include migrating to a Linux-powered single-board computer and adding speech recognition feature.

Intellispeak LLC

Lawrence, KS

FULL-STACK DEVELOPMENT INTERN AND CO-OP

May 2015 – May 2016

- Developed an information network for e-health services based on Gimbal Bluetooth beacons.
- Was responsible for development of server back-end, Android app, database, and web interface.

Kalscott Eng.

Lawrence, KS

SOFTWARE/HARDWARE DEVELOPMENT INTERN

May 2014 – Aug. 2014

- Developed an automated air-band radio for UAVs. This system is able to predict intent of the UAV and inform nearby traffic.

Industrial Automation Research Center, IUT

Isfahan, Iran

RESEARCH ASSISTANT

Feb. 2011 – Jun. 2012

- Made a 10-channel stand-alone data logger.
- Designed and developed a PC-based data acquisition system for ion-mobility spectrometry.

Beh-Azmoon

Isfahan, Iran

FIRMWARE ENGINEER

Aug. 2010 – Feb. 2011

- Created a wireless crack monitoring system for structural health monitoring.

Robotics and Automotive Research Center, IUT

Isfahan, Iran

RESEARCH ASSISTANT

Feb. 2006 – Aug. 2010

- Developed navigation system and sensor fusion algorithm for LynCean mobile robot.
- Implemented a motion planning algorithm for Persia soccer robots.
- Implemented a walking algorithm and developed a motor controller for Parsa humanoid robot.
- Prototyped an engine control unit for Honda GX35 engine.
- Developed an electrical dynamometer for low-power engines.

Leadership Activities

Eta Kappa Nu Honor Society - Gamma Theta Chapter

Rolla, MO

ACTIVE MEMBER

Mar. 2014 – Present

- Attended regular meetings and helped in voluntary services.

Super-mileage Car Student Design Team

Isfahan, Iran

HARDWARE DEVELOPMENT LEADER

Oct. 2009 – Aug. 2010

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

NODET Rescue Robot Student Design Team

Isfahan, Iran

TEAM LEADER

Sep. 2008 – Apr. 2009

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

Honors and Awards

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| 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 |

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 Network Science and Engineering*, submitted.
- 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*, submitted.
- **K. Marashi**, S. Sedigh, and A. Hurson, "Consideration of Cyber-Physical Interdependencies in Reliability Modeling of Smart Grids," *IEEE Transactions on Sustainable Computing*, under review.
- **K. Marashi**, M. Woodard, S. Sedigh, and A. Hurson, "Quantitative Reliability Analysis for Intelligent Water Distribution Networks," *Transactions of the American Nuclear Society*, 2014.

CONFERENCE AND WORKSHOP PAPERS

- **K. Marashi**, S. Sedigh, and A. Hurson, "Quantification and Analysis of Interdependency in Cyber-Physical Systems," *In Proceedings of the 3rd International Workshop on Reliability and Security Aspects for Critical Infrastructure Protection (ReSA4CI '16)*, 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 Embedded Topical Meeting on Risk Management for Complex Socio-Technical Systems*, Washington, D.C., Nov. 2013.

Patents

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| 2014 | Wireless Temperature Monitoring System for Centrifugal Casting , Pat. No. 81750 | <i>Iran</i> |
| 2010 | 2D Wireless Structural Crack Monitoring System , Pat. No. 62181 | <i>Iran</i> |
| 2010 | Handheld Data Logger for Agricultural Applications , Pat. No. 61142 | <i>Iran</i> |
| 2009 | Life Detector Robot with Adjustable Functionality , Pat. No. 60845 | <i>Iran</i> |
| 2009 | Extendable DC Motor Controller System , Pat. No. 60839 | <i>Iran</i> |
| 2009 | An Innovative Co-Axial Rotation Mechanism , Pat. No. 60847 | <i>Iran</i> |
| 2009 | Robust Track Mechanism for Locomotion of Mobile Robots , Pat. No. 60849 | <i>Iran</i> |
| 2009 | Lightweight Robust Platform for Mobile Robots , Pat. No. 60848 | <i>Iran</i> |

Professional Activities

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| 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

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

Professional Society Membership

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| 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

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| Programming Languages | Python, C/C++, Java, SQL, Verilog, Assembly |
| Web Technologies | HTML, JavaScript, jQuery, CSS, Jekyll, D3.js, Amazon AWS/EC2 |
| Development Tools | PyCharm, Android Studio, Eclipse, Git, IntelliJ IDEA, Keil |
| Computer Software | MATLAB & Simulink, LabVIEW (CLAD certificate, issued 5/13), OrCAD, TeX , SAS, JMP, Active HDL |
| Programmable Devices | AVR and ARM-based Microcontrollers, FPGA, CPLD |
| Communication Protocols | TCP/IP, 802.03, 802.11, UART, SPI, I ² C, ZigBee, Bluetooth |
| Operating Systems | Windows, Linux (Ubuntu, Raspbian), Android |
| Miscellaneous | Digital and analog circuit design, PCB design, Android application development |