

Koosha Marashi

SOFTWARE/FIRMWARE ENGINEER · FULL-STACK DEVELOPER

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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 interdependency models for smart grids. These analytical models help in identifying vulnerabilities and reducing service interruptions in modern electrical grid.
- Made an ultra-low-power VLF signal detector for underwater communications extending battery life of transceivers by a factor of 40.

Kalscott Eng.

Lawrence, KS

SOFTWARE/HARDWARE DEVELOPMENT INTERN

May 2016 – Aug. 2016

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

Intellispeak LLC

Lawrence, KS

FULL-STACK DEVELOPMENT INTERN AND CO-OP

May 2015 – May 2016

- Utilized Bluetooth beacons and constructed an information network to help patients with Autism.
- 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 UAVs with 98% accuracy and inform nearby traffic.

Beh-Azmoon

Isfahan, Iran

FIRMWARE ENGINEER

Dec. 2011 – Jun. 2012

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

IUT, Department of Electrical and Computer Engineering

Isfahan, Iran

RESEARCH ASSISTANT

Feb. 2006 – Nov. 2011

- Made a multi-functional stand-alone data logger.
- Developed navigation system and sensor fusion algorithm for LynCean mobile robot.
- Made a controller board for Parsa humanoid robot.
- Prototyped an AUTOSAR-compliant engine control unit for Honda GX35 engine.

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

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

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

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

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

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	Python, C/C++, Java, SQL, Verilog
Web Technologies	HTML, JavaScript, CSS, Jekyll, Amazon AWS/EC2
Computer Software	MATLAB & Simulink, LabVIEW (CLAD certificate, issued 5/13), OrCAD, μ TeX, SAS, JMP
Programmable Devices	AVR and ARM-based Microcontrollers, FPGA
Communication Protocols	TCP/IP, 802.03, 802.11, UART, SPI, I ² C, ZigBee, Bluetooth
Operating Systems	Windows, Linux (Ubuntu, Raspbian), Android
Miscellaneous	Git, TensorFlow, Digital and analog circuit design, PCB design, Android application development