

# 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 – Present

- **Dissertation:** *Stochastic Modeling and Analysis of Dependability 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 quantification 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

WEB/APPLICATION DEVELOPMENT INTERN AND CO-OP

May 2015 – Aug. 2016

- Developed an information network for e-health services based on Gimbal Bluetooth beacons.
- Was responsible for development of web server, 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

### Farman Khodro

Isfahan, Iran

CONTROL SYSTEMS ENGINEER

Feb. 2010 – Aug. 2010

- Designed an electric power steering system for Iran-Khodro Samand automobile.

## Robotics and Automotive Research Center, IUT

Isfahan, Iran

### RESEARCH ASSISTANT

Feb. 2010 – 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

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

## Publications

### JOURNAL PAPERS

- 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, "Modeling of cyber-physical systems: an introduction and survey of recent research," *ACM Computing Surveys*, 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 3<sup>rd</sup> 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 15<sup>th</sup> IEEE International Symposium on High-Assurance Systems Engineering (HASE)*, pp. 105-112, Miami, FL, Jan. 2014. Selected for appearing in 2<sup>nd</sup> 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	<b>Wireless Temperature Monitoring System for Centrifugal Casting</b> , Pat. No. 81750	<i>Iran</i>
2010	<b>2D Wireless Structural Crack Monitoring System</b> , Pat. No. 62181	<i>Iran</i>
2010	<b>Handheld Data Logger for Agricultural Applications</b> , Pat. No. 61142	<i>Iran</i>
2009	<b>Life Detector Robot with Adjustable Functionality</b> , Pat. No. 60845	<i>Iran</i>
2009	<b>Extendable DC Motor Controller System</b> , Pat. No. 60839	<i>Iran</i>
2009	<b>An Innovative Co-Axial Rotation Mechanism</b> , Pat. No. 60847	<i>Iran</i>
2009	<b>Robust Track Mechanism for Locomotion of Mobile Robots</b> , Pat. No. 60849	<i>Iran</i>
2009	<b>Lightweight Robust Platform for Mobile Robots</b> , Pat. No. 60848	<i>Iran</i>

## Professional Activities

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2016	<b>Reviewer</b> , Journal of Mathematics and Computer Science
2016	<b>Reviewer</b> , IEEE International Computers, Software & Applications Conference (COMPSAC)
2015	<b>Reviewer</b> , IEEE International Computers, Software & Applications Conference (COMPSAC)
2014	<b>Reviewer</b> , IEEE International Green Computing Conference (IGCC)
2014	<b>Reviewer</b> , IEEE International Symposium on High Assurance Systems Engineering (HASE)
2014	<b>Reviewer</b> , IEEE International Conference on Software Security and Reliability (SERE)
2013	<b>Reviewer</b> , IEEE International Conference on Software Security and Reliability (SERE)

## Professional Development

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

## Professional Society Membership

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

## Technical Skills

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