Koosha Marashi

Software/Hardware/Firmware Engineer

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A results-driven software/hardware/firmware engineer with 5+ years of experience in embedded microcontroller-based system software design and circuit/PCB design. Fast learner, highly organized, and capable of accomplishing tasks on time while being innovative. Proven leadership and project management skills and strong written and verbal communications. Seeking opportunities where my extensive hands-on and academic experience, acquired through summer internships and working with several research teams, will be well utilized.

Technical Skills

Programming Languages	Python (expert), C/C++ (proficient), SQL (proficient), Java (prior experience), Verilog (prior experience)
Computer Software	OrCAD, LabVIEW (CLAD certificate, issued 5/13), MATLAB & Simulink, LaTeX, SAS, JMP
Development Tools	IAR Embedded Workbench, Atmel Studio, Keil, MPLAB, Eclipse, PyCharm, Android Studio
Programmable Devices	AVR and ARM-based Microcontrollers, FPGA
Test Equipment	Logic Analyzer, Spectrum Analyzer, Oscilloscope, Signal Generator
Communication Protocols	UART, SPI, I^2C, USB, TCP/IP, 802.03, 802.11, ZigBee, Bluetooth
Web Technologies	HTML, JavaScript, CSS, Jekyll, Amazon AWS/EC2
Operating Systems	Windows, Linux (Ubuntu, Red Hat, Raspbian), Android
Miscellaneous	Agile development, Digital and analog circuit design, PCB design, Git, Android app development

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

Intellispeak LLC
Lawrence, KS

Software/Firmware Development Co-Op — *May 2015 – May 2016*

- Utilized Bluetooth beacons and constructed an information network to help patients with autism.
- Responsible for developing and testing an embedded firmware application for a GPS tracker with secure communications.

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 is to replace the traditional crack gauges eliminating 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 motor controller board, navigation system, and sensor fusion algorithm for LynCean mobile robot.
- Made a modular I^2C-based system for hardware control and sensor data integration on mobile robots.
- Made a controller board for Parsa humanoid robot.
- Prototyped an AUTOSAR-compliant engine control unit for Honda GX35 engine based on STM32 microcontrollers.

Education

Missouri University of Science and Technology (Missouri S&T) *Rolla, MO*

Ph.D. in Computer Engineering *Aug. 2012 – July 2017*

Isfahan University of Technology (IUT) *Isfahan, Iran*

B.S. in Electrical Engineering *Sep. 2006 – Feb. 2011*

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.

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**, 38th Geneva Invention Exhibition	*Geneva, Switzerland*
2010	**Best Invention Award**, Russian Incubator of Inventions	*Geneva, Switzerland*
2009	**Outstanding Undergraduate Researcher Award**, IUT	*Isfahan, Iran*

Patents

2014	**Wireless Temperature Monitoring System for Centrifugal Casting**, Pat. No. IR-81750
2010	**2D Wireless Structural Crack Monitoring System**, Pat. No. IR-62181
2010	**Handheld Data Logger for Agricultural Applications**, Pat. No. IR-61142
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