Mohammadreza Zaheri, EIT, M.Sc., B.Sc.

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Profile Overview

Education:
- Master of Applied Science in Geomatics Engineering from University of Calgary.
- Bachelor's Degree in Electrical Engineering from Iran university of Science and Technology.

Software Development Experience:
- Extensive experience (5+ years) in Assembly, C/C++ and Object Oriented Programming (OOP) under various Integrated Development Environments (IDE's) for real-time embedded systems.
- Extensive experience in embedded system development using different processors including C2000 and C5000 TI's DSP families, MSP430 family and Atmel AVR microcontrollers.
- Experience in different communication protocols development such as CAN, USB and RS485.
- Teaching assistant for C++ programming course at the University of Calgary (two semesters).
- Experience in GPS software receiver development in MATLAB and testing by real GPS data.

Communication Skills:
- Excellent verbal communication skills required to explain specialist information during tutorials and regular academic meetings.
- High-level written communication skills required to write thesis and research publications.
- Presentation at technical symposiums (recipient of two Best Paper/Presentation awards).

Other Expertises:
- Demonstrated ability to work effectively in teams on numerous projects with strict timelines.
- Excellent troubleshooting and problem solving skill as an embedded system developer.
- Effective leadership experience as the founder of a small business.

Work Experience

Design Engineer, Dynastream Innovations Inc.   **Sep 2011-present**
- C/C++ embedded software development on TI's ultra low power MSP430 microcontrollers.

Research Assistant, University of Calgary   **2008-2011**
- Position, Location And Navigation (PLAN) Group, supervised by **Prof. Gerard Lachapelle**
- Accomplishments:
  - Modeled Lever-Arm in GPS/INS Pedestrian Navigation System in C++ using Visual Studio.
  - Estimated Doppler frequency using MTM approach and MATLAB programming tools.
  - Analyzed polarization diversity approach as a novel approach in GNSS application.
  - GPSL1C/A positioning algorithm implementation on MATLAB.
- Other relevant skills: Presentation, Time management, Team working, Scheduling, Analysis, Report preparation.

Founder and Technical Support, Iran DSP Center, Iran   **2008**
- Founded a small business and managed a group to interact with customers and advise the best solution for their project requirements.
- Designed and implemented various development kits for the TMS320 DSP processor family of Texas Instruments and marketing for them.
- Designed a website to extend the knowledge of TI's DSPs in Iran (www.dspcentre.com).

Embedded System Developer, BAFF Co., Iran   **2006-2008**

- Designed and developed industrial embedded systems, BAFF Co, Iran. (www.baffco.com)
- Applied control algorithms such as PID, FFT and various digital filters using OOP with C++.
- Accomplishments:
  - Designed and developed a weld tester based on TI's DSP Controller (TMS320F2812).
    - Captured signal using the internal ADC.
    - Interfaced by user through a graphical LCD and keypad.
    - Saved captured data on MMC and transfer them to PC using USB interface.

  - Designed and developed a seven point thermostat for Extruders (Developed on Atmel AVR microcontrollers).
    - Monitored and controlled the temperature of seven points simultaneously using PID algorithm.
    - Designed separated analogue and digital sections and connected them through RS485 interface.

  - Designed and implemented a power measurement unit (Implemented on MSP430F1611):
    - Used internal ADC to capture six analogue signals (3phase Voltage and Current).
    - Implemented Delta-Sigma Modulator as a Quantizer Noise-Shaping.
    - Extracted harmonics of the input lines by FFT implementation.

  - Designed and implemented sender and receiver for underwater communication, using SSB modulation on TI's DSP, C5000 series.
    - Interfaced to external ADC and DAC through McBSP to capture signal.

Education

Master of Science in Geomatics, University of Calgary   **2008-2011**

- Member of Position, location and navigation (PLAN) group.
- Project: "Enhanced GNSS signal detection performance utilizing Polarization Diversity".
- GPA: 3.62 out of 4.

Bachelor of Science in Electrical Engineering, IUST Iran   **2001-2006**

- Project: "Odometry error modelling of a Mobile Robot".
- GPA: 15.7 out of 20.
- Modelled and compensated small robots odometry errors, using C++ programming with an object oriented programming design on TMS320F2812 based platform.

Awards

- Faculty of Graduate Studies Award, University of Calgary, June 2010.
- Best Paper Award in Track C at the PLANS 2010 Conference, May 2010.
- Best Session Presentation Award at the ION GNSS 2009 Conference, September 2009.
- Faculty of Graduate Studies Award, University of Calgary, September 2009.
- Special Award, University of Calgary, September 2008.
- University of Calgary international Award for Master's degree, May 2008.

Publications

Detection Performance of Polarization and Spatial Diversities for Indoor GNSS Applications.
Zaheri, M., A. Broumandan, V. Dehghanian and G. Lachapelle
International Journal of Antennas and Propagation, vol. 2012, Article ID 879142, 10 pages, 2012. doi:10.1155/2012/879142.

Dual-Polarized Synthetic Antenna Array for GNSS Handheld Applications.
Dehghanian, V., A. Broumandan, M. Zaheri and J. Nielsen
ISRN Communications and Networking, vol. 2013, Article ID 985401, 11 pages, 2013. doi:10.1155/2013/985401.

Comparing detection performance of polarization and spatial diversity for indoor GNSS applications
M. Zaheri, A. Broumandan, and G. Lachapelle, PLANS 2010 conference, Palm Springs, California, USA, May 2010 (*granted Best Paper Award in Track C*)

Dual-polarized synthetic array for indoor GNSS handheld applications
V. Dehghanian, M. Zaheri, J. Nielsen and G. Lachapelle, The 7th international symposium on wireless communication systems, UK, 2010.

Enhanced GNSS indoor signal detectability using Polarization Diversity
M. Zaheri, A. Broumandan, C. O'Driscoll, and G. Lachapelle, GNSS conference, Savannah, GA, USA, September 2010 (*granted Best Session Presentation Award*)

Error modeling of odometry in mobile robot
P. Moghadam, and M. Zaheri
International conference on robotics, vision, information and signal processing, ROVISP, Malaysia, 2007

Calibrating compass for mobile robot and its experimental results on Arian Robot
M. Zaheri, P. Moghadam, and A. M. Shahri
International conference on robotics, vision, information and signal processing, ROVISP, Malaysia, 2007