Matthew O'Shaughnessy

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Education

Georgia Institute of Technology, Atlanta, GA **Expected May 2016**

- Bachelor of Science in Electrical Engineering – concentrations in signal processing and computer architecture
- Minor in Computer Science – AI/machine learning concentration
- Overall GPA: 3.72/4.0, ECE GPA 3.68, CS GPA 4.0

Skills

Programming

- High-level: MATLAB, Java, Python
- Low-level: C/C++, CUDA, Assembly, VHDL
- Web: HTML, CSS, JavaScript (incl. jQuery)
- Implementation of data structures and sorting algorithms

Hardware

- FPGAs, VHDL, Microcontrollers
- Circuit Analysis and Design, Electronics Instrumentation

Software

- MATLAB/Simulink, Altera Quartus II, Xilinx Vivado, EAGLE
- SPICE, Mathcad, NI Multisim, Mentor Graphics tools
- Windows and Linux/UNIX Shell Scripting, Source control (Git, SVN)

Signal Processing

- Convolutions, correlations, DTFT/DFT/FFT, z-transforms, sampling, filter design and implementation
- Experience with radar, array, image, and speech processing

Experience

Electrical Engineering Co-Op, Georgia Tech Research Institute **May 2014 – Present**

- Worked in the Remote Sensing Group on real-time processing of airborne bathymetric lidar returns using a heterogenous architecture (CPU/GPU/FPGA)
- Optimized/multithreaded, contributed features to, and performed significant debugging in C++/CUDA/VHDL enabling real-time operation and visualization of bathymetric lidar system
- Wrote program in C++ to sequence arbitrary waveform generator used for system simulation
- Designed Helmholtz coil to produce uniform magnetic field for medical device testing; simulated using CST

Teaching Assistant, CS 1371 (Computing for Engineers) **August 2013 – Present**

- Taught weekly 90 minute recitation to 50 students covering introductory programming in MATLAB
- Graded homework assignments and exams, held office hours three hours/week
- Developed new interactive practice question bank with team of 6 TAs in Python/HTML/CSS/JS accessed by more than one thousand students per semester

Research Assistant, Efficient Signal Processing Lab **August 2013 – May 2014**

- Implemented Deep Belief Networks for classification of sensor data from multimodal accessibility device in MATLAB and Python (using NumPy/SciPy)
- Implemented performance-intensive portions of training algorithms in CUDA C++ for GPU execution
- Presented work at Georgia Tech Undergraduate Research Symposium; team won third place out of twenty-one teams in the ORS program research competition

Research Assistant, Parallel and Distributed Computing Lab **August 2012 – May 2013**

- Wrote distributed storage component of a MapReduce/Apache Hadoop simulator in Java and used to estimate the performance of different distributed storage topologies for MapReduce jobs
- Team won second place out of eighteen teams in the ORS program research competition

Musician

- Principal Violist, Georgia Tech Symphony Orchestra
- Violist in ensembles playing at weddings and receptions

Projects

http://matthewoshaughnessy.github.io/

Awards

National Merit Corporate Scholarship (2012-Present)
Zell Miller Scholarship (2012-Present)
Faculty Honors (Perfect GPA—Fall 2013, Spring 2014), Dean's List (all other semesters)
Kelly Family Music Scholarship (Spring 2013)