Matthew O'Shaughnessy

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OBJECTIVE

Seeking signal processing related internship for summer 2016 before entering graduate program.

EDUCATION

B.S. Electrical Engineering, Georgia Institute of Technology (GPA 3.76/4.0) **August 2012 – May 2016**

- Concentrations: signal processing, machine learning
- Additional coursework in computer science (CS GPA: 4.0)
- Graduate coursework in digital signal processing, pattern recognition, and machine learning

EXPERIENCE

Signal Processing Intern, Boeing Company **May 2015 – August 2015**

Boeing Satellite Systems – DSP Algorithms Group

- Created MATLAB and SystemVerilog implementation of 702 satellite channelizer power/spectrum measurement functions
- Designed multi-rate filter for spectrum monitoring function. Developed analysis to quantify trade-offs in design

Co-op, Georgia Tech Research Institute **May 2014 – Present**

Electro-Optical Systems Lab – Remote Sensing Group *(Full time, three semesters)*

- Optimized and multithreaded C++ lidar processing code to allow realtime operation; work enabled GTRI to be first in bathymetric lidar industry to achieve realtime processing with 40kHz laser fire rate
- Wrote C++ instrument control programs for arbitrary waveform generator, function generators, motors, cameras, and other sensors, allowing testing and data collection from experimental lidar systems
- Debugged and resolved issues with test hardware, coordinate computation model, and C++/CUDA/VHDL code, allowing successful data collection campaigns and demonstrations of realtime processing ability
- Created post-processing algorithms and simulations in MATLAB to analyze collected test data; used to contribute data analysis and writing to technical reports delivered to project sponsors
- Derived generalized coordinate computation model for calculation of lidar-measured coordinates and estimated error
- Developed computer vision algorithm to georeference and register lidar point cloud with hyperspectral imagery

Undergraduate Research, Georgia Tech Center for Signal and Information Processing **August 2012 – Present**

Center for Signal and Information Processing *August 2014 – Present*

- Derived and implemented convex optimization procedures for recommendation system
- Created MATLAB simulations for high-performance computing cluster to evaluate recommendation system

Efficient Signal Processing Lab *August 2013 – May 2014*

- Implemented deep belief networks in Python and CUDA C++ for GPU classification and fusion of multimodal sensor data

Parallel and Distributed Computing Lab *August 2012 – May 2013*

- Wrote distributed storage component of a MapReduce/Apache Hadoop simulator in Java; used to evaluate performance of different distributed storage topologies for MapReduce jobs

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

- Taught weekly 90-minute recitation to 50 students, earning over 4.8/5 mean score on end of term student evaluation
- Selected from group of 50 TAs as one of five Senior TAs to collaborate with professors on class administration
- Led software development team of seven TAs. Introduced agile development process and oversaw creation of online practice question bank and updated automatic homework grader

Other Leadership Positions

- Principal Violist, Georgia Tech Symphony Orchestra
- ECE Section Editor, The Tower (Georgia Tech Undergraduate Research Journal)

SKILLS

Programming *Proficient:* MATLAB, C++; *Experienced:* CUDA, Python, Java, Assembly, VHDL, Web Development
Object-oriented programming, Data structures/algorithms, Git, SVN, Unix

Hardware FPGAs, Microcontrollers, Circuit analysis and design, Electronics instrumentation

OTHER

Projects http://matthewoshaughnessy.github.io/

Awards National Merit Corporate Scholarship, Zell Miller Scholarship (full tuition), Kelley Family Music Scholarship, Dean's List, Faculty Honors, Georgia Tech President's Undergraduate Research Award

Clearance Active Department of Defense Security Clearance (Secret)