Brian H. Hulette

Education

M.Eng Electrical Engineering (DSP/Communications) - Virginia Tech **May 2015**
Falls Church, VA - National Capital Region Campus *4.0 GPA*
Coursework: Advanced Digital Communications, Detection and Estimation Theory, Introduction to Algorithms, Introduction to Network Security, Radar System Design, Network Architectures and Protocols
Project: *Simulation of Various Channelizer Structures Directed by a Cyclostationary Detector*

B.S. Computer Engineering - Rose-Hulman Institute of Technology **May 2011**
Terre Haute, IN *Summa cum laude*
Coursework: Digital Signal Processing, DSP System Design, Communication Systems, Electronic Music Synthesis

Experience

Commonwealth Computer Research, inc. (CCRi) **April 2016 - Present**
Data Scientist *Charlottesville, VA*

- Created client-side analytic and visualization tools for geospatial data
  - Contributed to Stealth, an application for visualizing tens of millions of geospatial observations in a web browser
  - Designed and implemented a novel caching approach to accelerate rendering animations
  - Developed an interactive time control which displays a plot of data volume over time for context
  - Contributed to the Javascript implementation of the Apache Arrow format for columnar in-memory analytics, and used it to create high-performance analytic tools
- Ported a C++/Qt transcription application to the web using emscripten

n~ask, inc. Signal Processing Systems **July 2011 - March 2016**
Associate *Fairfax, VA*

- Developed and deployed a system for automatic signal detection and classification.
- Contributed to an innovative set of Qt tools for viewing multiple sets of spectral data and identify common features between them
- Developed a WebSocket interface for the next major version of X-Midas, an SDR framework used by the Intelligence Community, to bring signal analysis to the web.
- Efficiently implemented various DSP algorithms, including a Maximum Likelihood Sequence Estimator (MLSE) demod and a wideband detector for identifying signals with repeated sync patterns.
- Implemented two techniques for identifying corresponding uplink/downlink frequencies for a particular signal. One using efficient DSP algorithms and the other using analytic tools leveraging MongoDB.

Duke University Center for In Vivo Microscopy **Summer 2010**
Undergraduate Research Assistant *Durham, NC*

- Implemented a 3D spherical Hough Transform in MATLAB to identify and measure glomeruli in extremely high resolution (15 μm voxels) MRI images of a kidney
- Created visualizations of 3D brain, kidney and heart MRI data

Technical Skills

Areas of Interest: Data Visualization, Machine Learning, Digital Signal Processing, Algorithm Development
Languages: Python, C/C++ , Javascript, MATLAB, LaTeX
Other: git, Mercurial, Linux, X-Midas, Windows

Publications

B. Hulette and A. Zaghloul. “Simulation of Various Channelizer Structures Directed by Cyclostationary Detector," presented at the 1st URSI Atlantic Radio Science Conference, Gran Canaria, Canary Islands, 2015.

L. Xie, R. Cianciol, B. Hulette, H. Won Lee, Y. Qi, G. Cofer, G.A. Johnson. "Magnetic resonance histology of age-related nephropathy in the Sprague Dawley rat." *Toxicologic Pathology*, vol. 40 no. 5, pp. 764-778, July 2012.