Mark Rosenberg

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Education

- **University of Florida** — Gainesville, FL
  Master of Science in Electrical Engineering; GPA: 3.29 — *Aug. 2012 – Dec. 2014*
- **Washington University in St. Louis** — St. Louis, MO
  Bachelor of Science in Electrical Engineering and minor in Physics ; GPA: 3.25 — *Aug. 2008 – May. 2012*

Experience

- **Afiniti** — Washington, DC
  Algorithm Engineer — *Dec 2016 - Aug 2017*
  - **Data Science**: Afiniti augments call center routing with data analysis to improve expected outcome. Applied Bayesian analyses, built and deployed models to production, wrote MySQL scripts to evaluate performance.
- **Computational NeuroEngineering Lab** — Gainesville, FL
  Graduate Research Assistant — *May 2015 - May 2016*
  - **Machine Learning**: Researched performance of the learning architecture Quantized Attention Gated Kernel Reinforcement Learning for spatial navigation applications. Compared algorithms with learning curve metrics and explored tradeoffs.
  - **Signal Processing**: Worked on real-time implementation of neural encoding/decoding algorithms for DARPA HAPTIX prosthetic arm. Analyzed audio filter timing of STM32F4 ARM microprocessor with Keil uVision, including ADC, startup code, clock, CMSIS library.
- **Cognition and Control in Complex Systems Lab** — Gainesville, FL
  Graduate Research Assistant — *June 2013 - Dec 2014*
  - **Stochastic Control**: Extended control architecture to provide ancillary support for the smart grid‘s demand response. Modeled stochastic loads as Markov Decision Processes for control, organizing presentation in LaTeX. Proved and simulated in MATLAB how to control load network optimally while satisfying local constraints. Derived approximations of optimal policy to analyze system‘s linearized model.
- **Media and Machines Lab** — St. Louis, MO
  Undergraduate Researcher — *Apr 2011 - Mar 2012*
  - **Data Visualization**: Developed data visualization and feature extraction software by creating user interfaces with PyQT and Qt Designer, connecting UIs to C++ functions through Python layers, and adding new Python and C++ functions, in order to allow the user to identify alpha helices from protein density.
- **Baker Research Group** — St. Louis, MO
  Undergraduate Researcher — *March 2009 - Dec 2010*
  - **Computational Biochemistry**: Learned the UNIX command line, Bash scripts, Python, and MATLAB in order to take protein coordinate simulation data from Amber Molecular Dynamics and then detect conformational changes in Thrombin due to Na+ binding. Demonstrated results with visualization programs for 2D (xmGrace) and 3D (VMD, MOE), showed that the top PCA eigenvectors separated the data, and developed algorithms using PCA to accurately animate the protein evolving to top modes. Performed K-means++ clustering on torus to identify active regions in the mechanism of the protein's transition. Awarded Summer Undergraduate Research Fellowship in 2010.

Projects

- **Python Programming (present)**: Iterative development of programs for a calendar app with a space-filling fractal display for .ics calendar events, .jpg photos, performance tracking, and policy learning. Project also includes developing tools for visualization and interaction with number-theoretic symmetries. Excerpts included on https://tauself.github.io