Scott Cole

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Skills

- Python (pandas, sklearn, seaborn, numpy, scipy, matplotlib), SQL, R, MATLAB, Tableau
- Signal processing, machine learning, data processing, statistics
- Technical writing and presentations
- Teaching - math tutor, teaching assistant, and guest lectures (e.g. clustering, GLMs, signal processing)

Work experience

Data science intern - Crime Lab New York Sep-Dec 2017

- Expanded upon and built a variety of machine learning models to predict future police misconduct
- Designed a highly adaptable workflow to easily compare potential algorithms and baselines
- Mined the database of officer behavior to uncover systematic differences between police districts and sergeants

Education

Ph.D. Candidate in Neuroscience GPA: 3.9 2014 - Present
University of California, San Diego La Jolla, CA

B.S. in Bioengineering, signal processing focus, math minor GPA: 4.0 2010 - 2014
Clemson University Clemson, SC

Graduate research

- Developed, tested, and applied a novel time series analysis to extract information about brain activity from neural signals
- Presented research at international meetings including several posters, 2 talks, and 1 organized symposium
- Published research in Journal of Neuroscience and Trends in Cognitive Sciences
- Mentored 3 PhD rotation students (3 months each) and 3 undergraduate researchers (>1 year each)
    - Guided projects and taught signal processing, python, coding practices, and neuroscience

Publications

1. **Cole SR**, Voytek B. (2018) Cycle by cycle analysis of neural oscillations. *bioRxiv*. In review at *Neuron*.
2. **Cole SR**, van der Meij R, Peterson EJ, de Hemptinne C, Starr P, Voytek B. (2017) Nonsinusoidal oscillations underlie pathological phase-amplitude coupling in the motor cortex in Parkinson's disease. *Journal of Neuroscience*
3. **Cole SR**, Voytek B. (2017) Brain oscillations and the importance of waveform shape. *Trends in Cognitive Sciences*

Code sharing

- Initiated the creation of a code base for collaboration between lab members and open sharing with the community
- Developed and released a Python package to compute coupling between brain rhythms
- Released the code (and data) to replicate the analysis and figures in my publications (1) and (2)
- Wrote a tutorial for supercomputing with Python, and presented to the Open Science Grid

Personal data science projects (see more at https://srcole.github.io/dataprojects/)

- **Burritos**: Developed a system to systematically judge 350+ burritos at 75+ taco shops. Characterized and analyzed patterns in data. Work featured by the San Diego Union-Tribune and the Partially Derivative podcast.
- **Currency exchange**: Scraped historical data, engineered features, implemented machine learning algorithms to predict the Euro-Dollar exchange rate, evaluated efficacy of trading strategies, and met with traders at FXCM.
- **Neuroscience poster popularity**: Designed an efficient data collection system for evaluating the popularity of posters at the Society for Neuroscience 2016 conference. Identified variance in popularity explained by geography and subfield.

Awards

Frontiers of Innovation Scholars Program - University of California, San Diego 2017
National Science Foundation Graduate Research Fellowship 2014-2017
Poly-Med Outstanding Senior Award - Clemson University Bioengineering Department 2014
Barry M. Goldwater Scholarship 2013
1st Place Undergraduate Oral Presentation - Society for Biomaterials Symposium, Clemson University 2012