Vanessa Sochat

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vsoch.github.io

EDUCATION

PhD Candidate, Biomedical Informatics: *Stanford University, Stanford CA* Sept 2011 - present

- Stanford Graduate Student Fellowship (Albion Walter Fellow)
- Microsoft Graduate Women's Scholar (2012)
- Student Editorial Board of Methods of Information in Medicine (2012-2013)
- *Courses*: Machine Learning, Databases, Theory of Probability, Data Mining and Analysis, Algorithms for Computational Molecular Biology, Data Driven Medicine, Computational Methods for Image Analysis and Interpretation

BA in Psychology and Neuroscience, *Duke University, Durham NC* Aug 2005 - June 2009

- Magna Cum Laude, Dean's List
- Member of Psi Chi, the National Honor Society in Psychology

EXPERIENCE

PhD Candidate, Poldrack Lab: *Stanford University, Stanford CA* June 2011 – present

- Designed and developed a modular infrastructure to deploy experiments to MTurk or locally, the Experiment Factory, including an interactive web interface (HTTPS), Dockerized Django application, Virtual Machines, an experiment testing robot, and a Python executable to connect the components.
- Led planning and migration of an old web application to new Django app with neo4j graph database
- Created a reproducible workflow and interactive web interface using a virtual machine to accompany a set of genomic, behavioral, and brain imaging analyses. Deployed on AWS EC2 with Elastic Load Balancing and custom alerts.
- Identified optimal parameters for comparison of statistical brain maps using classification framework.
- Developed RESTful APIs for multiple databases, including Python wrappers and Sphinx documentation
- Collaborated with neurology to build client facing web application to explore anatomical brain and genomic features associated with survival of brain tumors. Set up host machine with web server, Shiny (R) server, and custom Shiny application.
- Contributed significantly to lab databases and open source Docker deployed Django web applications
- Built model to classify artifact in functional MRI using regularized logistic regression
- Routinely create complicated analysis pipelines in a HPC environment to analyze thousands of brain images

Data Technician, Laboratory of Neurogenetics: *Duke University, Durham NC* May 2009 - May 2011

- Coded and deployed image processing pipelines in HPC environment using python, bash, and Matlab
- Wrote custom tools to check the quality of brain images, organize data, and interact with participants
- Responsible for creating and administering a battery with over 30 cognitive paradigms using Qualtrics

- Daily responsibilities included running fMRI experiments, and collecting saliva for genetic analysis
- Other responsibilities included maintaining the code base for the lab, documentation, and website

Founder, Goggles Optional: *Stanford University, Stanford CA* Nov 2013 - present

- Developed and currently maintain infrastructure and web presence for a weekly science podcast
- Weekly responsibility to generate episode content, update databases, and publish to itunes.

Student Director, Informatics Concentration for MD Students: *Stanford CA* May 2013 - May 2015

- Organized quarterly sessions with presentations for medical students interested in informatics
- Set up social media groups and advertising for MD student recruitment

Teaching Assistant, Biomedical Image Analysis and Interpretation: *Stanford CA* Jan 2013 - May 2014

- Created new course content for 10 lectures, including interactive slides and class handouts
- Single handedly developed two new projects, including a database of "cookie tumor" images
- Taught weekly section meetings, and gave two full lectures on machine learning and neuroinformatics

SKILLS AND QUALIFICATIONS

Computer Experience

Languages:	Python, bash, JavaScript, Matlab, HTML/CSS, php, R
Databases:	MySQL, PostgreSQL, neo4j, couchdb, Big Query, sqlite3
Infrastructure:	Docker, VirtualBox, Vagrant
Visualization:	D3, canvas, Shiny (R), Photoshop, Illustrator, Maya, Blender

Data Analysis

High Performance Computing:	SLURM, SGE, Google Cloud, AWS
Data Structures	JSON, xml/RDF, yaml

Web Development

Frameworks:	Django, Jekyll, Flask, Wordpress
Continuous Integration	CircleCI, Travis
Version Control	Github

Intense interest in building web applications integrating machine learning, visualization, and big data.

SELECTED PUBLICATIONS

Sochat V , Gorgolewski KJ, Koyejo O, Durnez J, Poldrack RA. Effects of thresholding on correlation-based image similarity metrics. Frontiers in Neuroscience. 2015

Sochat V , AuthorSynth: a collaboration network and behaviorally-based visualization tool of activation reports from the neuroscience literature. Front. Neuroinform. 9:6.

Poldrack, R, Laumann T, Koyejo O, Gregory B, Hover A, Chen MY, Gorgolewski KJ, Luci J, Joo SJ, Boyd R, Hunicke-Smith S, Simpson Z, Caven T, **Sochat V**, Shine J, et al. "Long-Term Neural, Behavioral, and Physiological Phenotyping of a Single Human: The MyConnectome Project" Nature Communications.

Sochat V., Supekar K, Bustillo J, Calhoun V, Turner JA, et al. (2014) A Robust Classifier to Distinguish Noise from fMRI Independent Components. PLoS ONE.

S. Finlayson, **V. Sochat**, L. Szabo, L. Yancy Jr. (2013 November). A Rapid Learning System for Personalized Glioblastoma Treatment Planning. Late breaking abstract presentation at the AMIA 2013 Annual Symposium, Washington DC, USA.

SELECTED TALKS

Sochat V, (2015, October). “Building Tools for Neuroimaging: the intersection of high performance computing, web technology, and fun in graduate school.”, Talk for Research Computing Group, Stanford CA, USA.

Sochat V, (2015, March). “Brain Maps Like Mine content-aware image comparison and retrieval for interactive visualization and meta-analysis of brain statistical maps”, Research in Progress Talk, Stanford CA, USA.

Sochat V, (2014, June). “Introduction to Machine Learning,” SIMR Summer Research Program, Stanford CA, USA.

Sochat V, (2014, May). “Machine Learning for Images,” Biomedical Imaging Analysis & Interpretation Lecture, Stanford CA, USA.

Sochat V, (2013, May). “Neuroinformatics,” Biomedical Imaging Analysis and Interpretation Lecture, Stanford CA, USA.

A full list of publications and presentations is available upon request.