

Erik Sanders Cheng

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Education

University of California, Berkeley

BS Chemistry (Expected May 2018)

- Selected undergraduate coursework: Physics (Mechanics, E&M and thermodynamics, Modern and optics); Chemistry (General and Analytical, Organic, Inorganic, Physical); Probability; Data Structures
- Graduate coursework: Advanced Quantum Mechanics

Experience

Nano Precision Medical

May 2017-Present

Nanomaterials Intern

- Developed improved permeance model of nanoporous films, implemented in Python for application to data.
- Developed an automated process that allowed for batch curve fitting, identifying features of interest in noisy data and using sklearn and numpy to fit modeled curves to data for feature extraction.
- Designed and conducted experiments to determine effect of two step anodization on film characteristics.
- Characterized films with Wyko profilometry and various imaging tools, including skimage and ImageJ.
- Communicated results in multiple weekly meetings using Jupyter notebooks and matplotlib visualizations.

UC Berkeley EECS Department

January 2017- May 2017

Course Tutor, Foundations of Data Science

- Explored and cleaned large data sets for instructional materials, deployed both as with LaTeX and Jupyter.
- Added features to datascience, a custom Python package developed for teaching intro data science at Cal.
- Created documents and practice problems for students in topics of both programming and probability.
- Led weekly group tutoring sessions, as well as one-on-one sessions once or twice a week.

Rubik's Cube Club at Berkeley

January 2015- Present

External Vice President

- Organize and instruct Math 98, a class about Rubik's cubes. Lead two small groups in weekly classes.
- Co-organized multiple official competitions of 200+guests; manage staff and logistics during events.
- Built a competition announcements page using HTML/CSS to provide updates to all competitors.

Sandia National Laboratories

June 2016-August 2016

R&D Student Intern

- Improved methods for quantification of microscopic features. Reduced uncertainty by a factor of ~10.
- Worked on a semi-automated experiment procedure using Python to interface with equipment.
- Visualized effects of individual parameters in electrochemical processing for presentation to clients.

Saykally Group, UC Berkeley

May 2015-Present

Undergraduate Research Assistant

- Studying the evaporation behavior of aqueous solutions using Raman thermometry techniques.
- Optimize data collection through active control of optical elements in Raman spectroscopy experiment.
- Determine quality of data by observation of Raman spectrum features and post analysis of data through processing in MATLAB and Igor, assessing results using theoretical cooling models.

Projects and Publications

Surprising Effects of Hydrochloric Acid on the Water Evaporation Coefficient Observed by Raman Thermometry - Rizzuto, A. M., Cheng, E. S., Lam, R. K., Saykally, R. J. J. Phys. Chem. C (2017)

Understanding Bias in Sampling Users with Twitter's Streaming API

May 2017

- Independent study supervised by Prof. Deb Nolan in assessing sampling biases in Twitter's publicly available Streaming API, using automated queries from a full sample and applying permutation testing.

2016 Presidential Election Case Study

November 2017 – December 2017

- An investigation of the relative predictive power of various features found in Census and historical election datasets, merging from several file formats with dirty data and applying multiple classification techniques.

Skills

- **Proficient:** Python, R, Java
- **Familiar:** XML, SQL, HTML, CSS, Scheme
- **Tools:** Jupyter, git/Github, bash, ssh/ftp
- Electrochemistry, Materials Chemistry
- Image, signal, text processing
- Data cleaning and visualization