Erik Sanders Cheng
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Education

UC Berkeley, Berkeley, CA August 2014-Present

Chemistry BS, GPA 3.4

- Relevant coursework: Probability for Data Science, Advanced Linear Algebra, Directed Study for Undergraduates in Statistics, Structure and Interpretation of Computer Programs, Data Structures, Foundations of Data Science, Concepts in Computing with Data, Probability and Mathematical Statistics in Data Science
- Other coursework: Graduate Quantum Mechanics, Organic Chemistry, Inorganic Chemistry, Calculus

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)

2016 Election Case Study Nov 2016- Dec 2016

- Reported on improved classification models regarding 2016 election, merged data from many file formats.
- Implemented KNN and decision tree models, achieved highly improved prediction rates of 88 and 90%.

Monte Carlo Simulation of Ad Hoc Networks October 2016

- In R, used Monte Carlo methods to study ad hoc network connectivity with respect to network size.

Anodization as a Low Cost, Scalable, and Tunable Nanoscale Manufacturing Technique

Rio Grande Symposium for Advanced Materials October 2016

- Produced and presented poster detailing automation and technical analysis of small scale anodization.

Experience

Course Tutor- Data 8, UC Berkeley January 2015-Present

- Select, explore, and clean large data sets from online sources for use in instructional materials.
- Enhanced various functionalities in datascience, a custom package for teaching this course. Also used Sphinx to improve documentation. Deployed for use by over 700 students.

Research Assistant- Saykally Group, UC Berkeley May 2015- Present

- Optimize data collection through active control of optical elements in Raman spectroscopy experiement.
- Designed a mask for CCD fiber optic to cut background interference by around 90%.
- 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.

Research and Development Intern- Sandia National Labs June 2016- Aug 2016

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

Electronics Assistant- University of Northern Iowa Physics Department June 2013 to August 2013

- Analyzed synthetic crystals based on elemental properties and physical features using SEM and EDX.
- Tested and debugged code for Arduino units, constructed and wired go karts for a physics summer camp.

Skills

- Python (numpy, scipy, ipynb, pandas, matplotlib)
- R (rsqlite, jsonlite, ggplot2)
- Familiarity with SQL, XML, Scheme, HTML5/CSS3
- git/git bash/Github
- Fluent in English and Chinese (spoken)
- Statistics (Regression, hypothesis testing, Bayesian inference, Markov models)
- ML/validation (KNN, Naïve Bayes, decision trees, MCMC, cross validation, permutation testing)
- Autodesk Inventor, soldering, milling