

Gary Cheng

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EDUCATION

University of California, Berkeley

GPA: 4.0

B.A. Computer Science | Anticipated Graduation: May 2019

- *Coursework:* Machine Learning, Time Series, Statistics, Probability & Random Processes, Convex Optimization, Algorithms, Data Structures, Computer Architecture, Real Analysis, Linear Algebra

EXPERIENCE

Research Assistant

Aug '17 – Present

Laurent El Ghaoui, BAIR Lab, Berkeley EECS

- Applying optimization techniques to find best exemplars that summarize a dataset. Instead of using the entire dataset, these exemplars can then be used to train a model. Has promise to reduce computational overhead. Researching new methods to perform subspace clustering using a Frank Wolfe algorithm.
- Submitted a paper as first author to AISTATS conference

Research Assistant

Aug '16 – Present

Jean Walrand, BLISS Lab, Berkeley EECS

- Applying a stochastic optimization approach to the scheduling problem, optimizing surgery room scheduling, aiming to minimize idle and wait times by altering when patients arrive at the hospital
- Implementing a stochastic gradient descent with infinitesimal perturbation analysis on a non-convex cost function to determine optimal notification times for patients in an online scheduling system
- Submitted a paper as first author to the American Control Conference

Software Development Intern

May '17 – Aug '17

Amazon.com

- Full stack developer on the Forecasting team in Supply Chain Optimization, used data analysis techniques to analyze runtime and success rates for the Forecasting Workflow Service Platform
- Implemented graph algorithms to give insight into the longest running components of forecasting calculations, created new Java APIs and integrated them into a Ruby on Rails front-end, researched customer usage patterns to determine the most useful metrics to develop

Teaching Assistant –

Jan '17 – Present

Berkeley EECS, Berkeley

- **Probability and Random Processes (EECS126):** Teaching the following topics: Markov Chains, Poisson Processes, Entropy, Moment Generating Functions, Maximum Likelihood Estimation
- **Algorithms (CS170):** Teaching the following topics: Dynamic Programming, Linear Programming, Streaming Algorithms, Divide and Conquer, Graph Algorithms, and NP-Completeness
- **Data Structures (CS61b):** Teaching the following topics: Graph Algorithms, Sorting, Java Syntax. Worked on the data analytics team

PROJECTS

Terrorist Attack Prediction (github.com/garyxcheng/terrorism_prediction)

- Used SARIMA Time Series models in R to predict the outcome and number of future terrorist attacks in the next year. Performed data interpolation and outlier removal operations to preprocess data from the Global Terrorism Database

Taxi Cab Markov Chain (github.com/garyxcheng/pafnutys-taxi)

- Used Python, Pandas DataFrames, Numpy to model NYC taxi cab movement/fares as a Markov Chain, Used k-means algorithm and elbow method to generate state space of Markov Chain. Found steady state distribution of the graph as well as the locations in NYC that maximize profit for taxi cab drivers.

LANGUAGES/Frameworks

Proficient: Python, Pandas, Numpy, Java, C, SQL

Familiar: R, Ruby on Rails, Swift, HTML, CSS, JavaScript, Node.js