CHING FANG

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EDUCATION

University of California, Berkeley *Graduation: Fall 2018*
B.A. in Computer Science GPA: 3.57
B.A. in Molecular & Cell Biology GPA: 3.64

RESEARCH EXPERIENCE

Carmena Lab | Berkeley EECS Department May 2018 - present

- Used brain-machine interfaces (BMI) to examine how neuroprosthetic learning is formed.
- Developed a new framework for optogenetic BMI in mice allowing for an automated, 24/7 neural interface.
- Developed pipeline for signal acquisition, signal processing and data extraction using Java, Python, and Arduino.

Feldman Lab | Helen Wills Neuroscience Institute Jan 2015 - May 2018

- Examined how tactile sensation was encoded in the primary somatosensory cortex.
- Applied machine learning models and graph algorithms in Python on sparse, high-dimensional data. Computationally modeled neuron populations and determined a possible encoding mechanism used in the brain.
- Resulted in a poster presented in the UCB Molecular Biology Poster Session and in the California Cognitive Science Conference.

Collins Lab | Berkeley Cognitive Science Department May 2016-Aug 2016

- Examined reinforcement learning models in human cognition by testing how decision making changed as subjects learned specific tasks.
- Automated behavioral experiments by developing an interactive application made with JavaScript frontend and SQL backend, hosted on Amazon Mechanical Turk.

TEACHING EXPERIENCE

BioE 147/247: Synthetic Biology, UC Berkeley Aug 2018 - Dec 2018
Undergraduate Student Instructor

- Helped manage a hybrid online/in-person class in collaboration with MIT 20.305x course.
- Led discussion session for around 20 students. Topics include metabolic engineering and synthetic biology design principles.

CS 170: Algorithms & Intractable Problems, UC Berkeley Aug 2017 - Dec 2017
Undergraduate Student Instructor

- Developed new course project for a class of 700+ students, and implemented staff solution.
- Led discussion sessions for 60+ students in total, as well as course-wide review sessions. Topics include asymptotics, graph theory, linear programming, dynamic programming, approximation algorithms, etc.

CS 61B: Data Structures, UC Berkeley Aug 2016 - Aug 2017
Undergraduate Student Instructor (Head UGSI Summer 2017)

- Created test problems and helped manage course logistics for a class of 300+ students. Piloted and developed new materials for active-learning based review sessions. Created new review materials and notes, hosted publicly on personal website.
- Led discussion and lab sections for 50+ students in total. Topics include Java syntax, Java development, streams, balanced search structures, hashing, graph algorithms, etc.

Computer Science Mentors: CS61A Aug 2015 - May 2016
Senior Mentor

- Led weekly tutoring sessions for students in Berkeley's CS61A, and trained new tutors.

PROJECTS

Medical Robot (Academic): Developing a medical robot for automating ultrasonography procedure, using the Baxter robot and ROS platform.
Video Recording App (Research): Added features to a macOS video collection app for recording neuron activity. Implemented a closed-loop system for ROI selection, online z-score calculation, and feedback control through analog/digital output to an Arduino. Developed in Swift with Xcode.
Aquatic ROV: Developed as part of a project with Berkeley FemTech

AWARDS & HONORS

- **Molecular & Cell Biology Honors:** Graduated with honors for completion and presentation of thesis research.
- **IL Chaikoff Award (2018):** in recognition of outstanding achievement and excellence in the Neurobiology emphasis.
- **Best Presentation Award:** awarded in Molecular & Cell Biology Thesis Poster Session for "Neural Coding of Time in Multi-Whisker Sensation".
- **Dean's Honors List** (Spring 2018): in recognition of top 4% of undergraduates in the College of Letters & Sciences.

RELEVANT COURSES

Molecular Biology: Genetics & Genomics, Organic Chemistry, Biochemistry, Molecular Neurobiology, Systems Neuroscience, Neurobiology Lab
Theory/Statistics: Linear Algebra, Machine Learning, Optimization Models, Artificial Intelligence, Discrete Math & Probability Theory, Signals & Systems, Algorithms & Intractable Problems
Design/Implementation: Data Structures, Computer Architecture, Information Devices & Systems, Robotics

SKILLS

Languages (In order of comfort): Python, Java, Matlab, Swift, C
Miscellaneous: Linux, Amazon EC2, NumPy, scikit-learn, Git, Xcode, Arduino, Amazon Mechanical Turk, TDT Digital Signal Processing, Robot Operating System (ROS), LaTeX