

James Bowden

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EDUCATION

California Institute of Technology **GPA 4.0/4**
B.S. Computer Science, Data Science Minor **Grad: 2023**

EXPERIENCE

Software Engineering Intern, Uber | Jun. – Sept. 2021

- Design and analyze machine learning models on the Driver Trip Pricing team to increase driver offer acceptance rates and overall trip completion rates
- Integrate new internal machine learning platform for increased modeling and training flexibility
- Improved trip completion model via conditional prediction

Machine Learning Researcher | Jun. 2020 – Present

Yisong Yue Group, Caltech

- Integrated Deep Kernel Learning (DKL) with BayesOpt (BO) to enhance model fit and find global optima faster
- Improved performance and runtime via Thompson sampling and Monte Carlo dropout
- Cut regret by over 50% compared to best GP models
- Develop multi-fidelity DK-BO for real applications like COVID protein engineering and nanophotonics filter design

Head Teaching Assistant, Caltech | Sept. 2020 – Present

- Serving as TA for:
 - CS 24: Computing Systems, C [Fall 2021]
 - CS 3: Software Design, C [Spring 2021]
 - CS 2: Data Structures/Algorithms, Java [Winter 2021, 2022]
 - CS 1: Intro Programming, Python [Fall 2020]
- Hold office hours, give code reviews, lead lab section, grade code, instill good development/testing practices, write lab
- Head TA for CS 2 [Winter 2022]

Bioinformatics Researcher | Dec. 2019 – Jan. 2021

Kaihang Wang Lab, Caltech

- Led team of 3 senior students to create automated data pipeline for reconstructing ancestral genomes
- Produced tools to predict set of minimum essential genes, assemble sequencing reads, recode genes

Software Developer, Caltech | Mar. – Jun. 2020

- Created escape game in C with team of 2 other students
- Implemented A* pathfinding, physics engine, vision, map
- Significantly reduced lag via dynamic programming

SKILLS

Languages

Python, C, Java, JavaScript, SQL, MATLAB, HTML, OCaml

Tools

PyTorch, Keras/TF, sklearn, pandas, NumPy, matplotlib

Techniques

Deep Learning, BayesOpt, Regression, Kernel methods

COURSEWORK

- ML & Data Mining
- Machine Learning Systems
- Advanced Topics in ML
- Statistical Inference
- Mathematical Optimization
- Probability Models
- Probability and Statistics
- Applied Linear Algebra
- Data Structures/Algorithms
- Software Design
- Computing Systems

AWARDS

Thermo-Fisher Sch., 2019

For medical research (1 of 6)

Teaching Mode, 2018

Best research presentation in cohort of 30

Eagle Scout, 2018

ACTIVITIES

Treasurer, Caltech Student Investment Fund

\$1M AUM, STEM sector focus

Ambassador, Caltech SURF

Advise research fellows

Social Director, Fleming

Organize events for dorm

Caltech Cannon Master

Caltech Water Polo Team