James Bowden

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EDUCATION

UC Berkeley | July 2023 – Present
Ph.D. Computer Science

Caltech | 2019 – 2023
B.S. Computer Science, Data Science

EXPERIENCE

PhD Student, Berkeley AI Research (BAIR) | Jul. 2023 – Present

Co-advised by Jennifer Listgarten and Sergey Levine. Machine learning-based computational design / decision-making for protein engineering, material design, other scientific problems.

Ryan Adams Group (LIPS), Princeton | Jun. 2022 – Jan. 2023

Design of 2/3-D structures given arbitrary mechanical objectives (e.g., precise multi-stability in metamaterials). Reframed topology optimization using implicit surfaces to enable functional priors over smoothness and symmetry.

Katie Bouman Group, Caltech | Jan. 2022 – Jun. 2022

Exaggerate image classifier decision features for model explainability using CycleGAN.

Anima Anandkumar Group, Caltech | Jan. – Mar. 2022

Efficient training of diffusion models via hierarchical conditioning in the Fourier domain.

Yisong Yue Group, Caltech | Jun. 2020 – Aug. 2023

Deep kernel surrogates for BayesOpt (BO) to address complex scientific design problems. Used for COVID antibody design (with LLNL), nanophotonic filter design, etc.

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

Designed deep conditional models to increase driver offer acceptance, trip completion rates. Pioneered shared embedding for country-wide model to transfer learning to new cities.

Head Teaching Assistant, Caltech | Sept. 2020 – Jun. 2023

Hold office hours, write assignments, give code reviews, lead lab, grade code. As Head TA for CS 2, hire/train/support/manage 18 other TAs and help design/improve course.
CS 156ab: **Machine Learning** [FA 21/22 SP 22/23] • CS 24: **Computing Systems** [FA 21] • CS 3: **Software Design** [SP 21] • CS 2: **Data Structures/Algorithms** [WI 21/22/23] • CS 1: **Intro CS** [FA 20]

PUBLICATIONS

Learning Region of Interest for Bayesian Optimization with Adaptive Level-Set Estimation.
ICML 2023 / ICML 2022 Workshop.

Deep Kernel Bayesian Optimization.
Pre-print 2021.

Bridge-Group: An Opt-In Recitation Section to Facilitate the Transition from CS1 to CS2.
RESPECT 2022.

AWARDS & SERVICE

NSF GRFP (2023 – 2028)

UC Berkeley Chancellor's Fellowship (2023)

Rose Hills Foundation Fellowship (2023)

Berkeley EECS Excellence Award (2023)

Caltech Bhansali Prize for Outstanding CS Research (2023)

Caltech Rypisi SURF Fellow (2022)

Caltech CMS DEI Committee (2022 – 2023)

Caltech SURF Ambassador (2020, 2021)