

Alyssa Unell

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EDUCATION

Stanford University | Stanford, CA

PhD Student in Computer Science

Expected June 2028

Massachusetts Institute of Technology (MIT) | Cambridge, MA

B.S. in Computation and Cognition; GPA: 5.0/5.0

May 2023

- **Relevant Coursework:** Machine Learning, Artificial Intelligence, Linear Algebra, Introduction to Software Engineering, Introduction to Algorithms, Probability and Random Variables, Computer Vision, Natural Language Processing

RESEARCH & WORK EXPERIENCE

MIT CSAIL – Golland Lab | Cambridge, MA

Undergraduate Researcher, Bayesian MRI Reconstruction

Aug 2022 – May 2023

- Explored joint priors in the image and frequency space and their impact on score based generative models to improve the reconstruction quality of under sampled and noisy MR images

Excellence Research Internship Program | Lausanne, Switzerland

May 2022 – Aug 2022

Software Engineer Intern

- Designed an algorithm to ensure secure data sharing for sensitive information in decentralized machine learning
- Introduced software developments to an open-source platform that enables decentralized learning in a secure environment
- Developed unique tests to improve the quality of the existing code within the open-source code base

Intel – Architecture and Graphics Software Department | Hillsboro, OR

Jun 2021 - Aug 2021

Machine Learning Intern

- Analyzed Intel distribution of Pandas library through implementation of a recommender system containing 200 million data points, identifying six bugs, and confirming 100x delay of Intel Distribution compared to stock Pandas
- Utilized numerous visualization tools to provide feedback for the proposed Intel profiler UI

MIT Department of Brain and Cognitive Sciences – Sinha Lab | Cambridge, MA

Undergraduate Researcher, Biologically Inspired Noise

Sep 2020 – May 2022

- Examined effects of biologically inspired noise in neural networks to identify its role in infant visual development
- Trained networks using Keras in TensorFlow and assessed impact of training regimes on robustness to noise in testing
- Determined that biologically inspired training can improve network performance by an average of 15%

Undergraduate Researcher, Facial Recognition Robustness

Jun 2020-May 2021

- Compared artificial and biological neural networks to examine impact of image degradations on classification robustness
- Performed clustering analysis on image classifications to assess networks' accuracy of numeric facial encodings

Undergraduate Researcher, Visuomotor Feedback

Jan 2020-May 2020

- Executed pre-post study with 10,000 samples to identify effects of training on visual feedback and fine motor control
- Developed quantitative image comparison method to analyze images and ensure accurate tracing usability

PUBLICATIONS AND POSTERS

Unell, A., Eisenstat, Z.M., Braun, A. *et al.* Influence of visual feedback persistence on visuo-motor skill improvement. *Sci Rep* **11**, 17347 (2021).

Verma, A., Keane, K., Unell, A., *et al.* Transformation Tolerance of Machine-Based Face Recognition Systems. ICLR Generalization Beyond the Training Distribution in Brains and Machines Workshop Poster Presentation 2021.

LEADERSHIP

MIT CodeIt

Jan 2020 – Jan 2023

Middle School Mentor Coordinator

- Coordinated mentor recruitment and operating logistics to promote STEM engagement for girls and non-binary students

MIT Women's Varsity Volleyball

Aug 2019 – Nov 2022

Captain, 2022 AVCA All-Region Team

- Leads team by mentoring undergraduate members and organizing logistics of practices, tournaments, and workouts

SKILLS & AWARDS

Skills: Python, PyTorch, JavaScript, TypeScript, Git, TensorFlow, Machine Learning, OpenCV, R, Linux, Pandas, Spanish

Awards: NSF Graduate Research Fellowship, Stanford Graduate Fellowship, MIT Brain and Cognitive Science Research Award, Undergraduate Academic Award, Glushko Prize for Outstanding Undergraduate Research in Cognitive Science, EPFL Excellence Scholarship, ThinkSwiss Research Scholarship