



Bradley Emi

Education

2018–2019 **M.S., Computer Science (Artificial Intelligence)**, *Stanford University*, Stanford, CA.

2014–2018 **B.S., Physics**, *Stanford University*, Stanford, CA.

GPA: 3.7

Experience

2018–Present **Stanford Vision and Learning Lab, Broad Perception Subgroup**, *Research Assistant*, Stanford, CA.

- Reinforcement learning in sensorimotor/navigation capabilities of active, embodied agents
- Improved sample-efficiency and generalization of visual navigation and exploration tasks by an order of magnitude by leveraging pre-trained perception priors
- Contributed new environments to Gibson environment, one of the most perceptually realistic indoor navigation simulators available

Sum. 2016–2017 **Uber Advanced Technologies Group, Perception/Motion Planning**, *Software Engineering Intern*, Pittsburgh, PA.

- Worked on Perception and Motion Planning teams for autonomous vehicle research
- Research in active learning for motion planning under uncertainty

2015–2016 **Stanford Linear Accelerator Center, ATLAS Group**, *Research Assistant*, Menlo Park, CA.

- Developed a regression model to predict the vertices of particle jets from collisions at the LHC in absence of tracking information in vector boson fusion events, critical and rare Higgs-Boson producing events
- Engineered new features for machine learning model to understand correlations between LHC energy deposits and high-energy particle tracks in Monte Carlo simulations and real data from the ATLAS experiment

Sum. 2015 **NASA Jet Propulsion Laboratory, Astrophysics Division**, *Research Intern*, Pasadena, CA.

- Built a preprocessing pipeline for a set of multichromatic Hubble Space Telescope images
- Used machine learning methods including neural network to detect astrophysical objects, clean spurious image features, classify stars and galaxies, and fit parametric galaxy models
- Incorporated galaxy models into simulator of gravitational lensing effects of dark matter

Sum. 2014 **United States Naval Observatory, Flagstaff Station**, *Research Intern*, Flagstaff, AZ.

- Independently observed white dwarf variable stars on USNO 40-inch refractor
- Wrote image-processing software and modeled PSF for fixed aperture photometry
- Analyzed periodicity to classify the dynamics of different classes of white dwarf variable stars

Publications

Alexander Sax, **Bradley Emi**, Amir R. Zamir, Leonidas Guibas, Silvio Savarese, Jitendra Malik. *Mid-Level Visual Representations Improve Generalization and Sample-Efficiency for Learning Active Tasks*. ArXiv preprint, Dec. 2018. <http://perceptual.actor>

Bradley Emi, Andrés Alejandro Plazas Malagón, Jason Rhodes. *Expanding the Chromatic Range of Galaxies for Weak Gravitational Lensing Simulation*. Stanford Undergraduate Research Journal, 2016.

Projects

- Carta** Contributed to an app for Stanford students and administrators using data mining techniques on 50 years of course history and grades to help Stanford students plan successful paths through the university. Used natural language processing techniques to create a course embedding to help students find similar classes in the Stanford course catalog.
- ChemType** Wrote an app using semi-supervised machine learning and classical computer vision to recognize user-drawn chemical structures. Built a neural network to detect the graph structure of chemical molecules, even ones not seen in training.

Teaching

- 2018 **Summer Science Program**, *Teaching Assistant/Residential Mentor*.
Taught calculus, astrophysics, and programming to a group of gifted high school students in an intense 6-week program and mentored the students on near-Earth asteroid orbital determination research projects.
- 2015–2016 **Stanford Splash**, *President*.
Led the administration team for Splash, an educational outreach program that brings 2000 7th-12th graders to campus to provide teaching opportunities for undergraduates and graduate students. Oversaw a \$100,000 budget, teaching team of 500 volunteers, and admin team of 30 students. Designed several classes in physics and programming using an active learning approach.
- 2017 **Stanford Physics Department**, *Teaching Assistant*.
TA for Physics 21, Mechanics, Fluids, and Heat

Skills

Programming Languages

- Proficient Python (inc. PyTorch, TensorFlow), C++, C, MatLab
Familiar R, HTML/CSS

Tools

LaTeX, cloud computing platforms (i.e. AWS/GCP/Azure), Linux and bash, git, SQL, Spark

Languages

- Native English
Working Mandarin Chinese

Awards

- 2016 Hoefler Prize for Writing in the Major

References

Provided upon request