

Benjamin Eisner

Curriculum Vitae

CONTACT INFORMATION	Carnegie Mellon University Pittsburgh, PA 15232	<i>Email:</i> baeisner@andrew.cmu.edu <i>Site:</i> www.beisner.me
RESEARCH INTERESTS	Learning for manipulation, deep reinforcement learning, 3D perception	
EDUCATION	Carnegie Mellon University , Pittsburgh, Pennsylvania USA Ph.D. in Robotics, Robotics Institute - School of Computer Science Advisor: David Held Coursework: <i>Intermediate Statistics (36-705)</i> , <i>Computer Vision (16-720)</i> , <i>Kinematics/Dynamics/Control (16-711)</i> , <i>Deep RL for Robotics (16-881)</i> , <i>Advanced ML (10-715)</i>	August 2020 -
	Princeton University , Princeton, New Jersey USA Bachelor of Science in Engineering, Computer Science Graduated with High Honors (Magna Cum Laude) GPA: 3.51 / Departmental GPA: 3.64 Thesis: “Deep Learning methods for 3D segmentation of neural tissue in EM images” Advisor: Sebastian Seung	Sept. 2013 - Jun. 2017
	University College London , London UK Affiliate Student in Computer Science	Jan. 2016 - Jun. 2016
EXPERIENCE	Samsung AI Center , New York, New York USA <i>Machine Learning Research Engineer</i> Advisors: Daniel Lee, Sebastian Seung, Larry Jackel <ul style="list-style-type: none">• Developed novel deep reinforcement learning algorithms for exploration in sparse environments and improved training stability, leading to a conference paper (IJCAI-PRICAI 2020) and a workshop paper (ICML 2019).• Collaborated on a project that fused traditional planning with deep learning to learn diverse manipulation behaviors, resulting two publications (including IROS 2019).• Designed a complete system for robotic manipulation using the Kinova Gen3 arm, as well as low-level drivers for the RealSense camera, a dynamic vision sensor, and Syntouch touch sensors.• Architected a comprehensive deep reinforcement learning framework for large-scale distributed learning and experimentation.	Nov. 2018 - Aug. 2020
	Google , New York, New York USA <i>Software Engineer (L3 & L4) - Geo Data</i> <ul style="list-style-type: none">• Led an organization-wide effort to test how massive data changes affected the Google Maps API.• Developed a workflow management system for simulating world-scale launches for Google Maps and Knowledge Graph.• Consistently managed tens of simultaneous experiments that processed petabytes of data across thousands of nodes, enabling major org-wide launches.	Sept. 2017 - Nov. 2018

Princeton University, Princeton, New Jersey USA **Jan. 2015 - May 2017**
Lab Teaching Assistant

- Assisted undergraduates with programming assignments for introductory Computer Science courses.

Machine Reading Lab @ UCL, London UK **Jan. 2016 - Nov. 2016**
Research Intern

Advisors: Sebastian Riedel, Tim Rocktaschel

- Researched ways to learn embeddings for new tokens based only on short, natural language descriptions, leading to a workshop publication at EMNLP 2016.
- Demonstrated quantitative improvements on downstream NLP tasks (i.e. Twitter Sentiment Classification) using learned Emoji embeddings.

Google, Kirkland, Washington USA **Jun. 2016 - Sept. 2016**
Software Engineering Intern

Microsoft, Redmond, Washington USA **Jun. 2015 - Sept. 2015**
Software Engineering Intern

Contactive, New York, New York USA **Jun. 2014 - Dec. 2014**
Software Engineering Intern

Konica Minolta Medical Imaging, Wayne, New Jersey USA **Jul. 2013 - Aug. 2013**
Software Development Intern

HONORS AND AWARDS

NSF Graduate Research Fellowship **2020 - present**
 High Honors, Department of Computer Science, Princeton University 2017
 Elected to Sigma Xi 2017
 Best Paper, SocialNLP Workshop at EMNLP 2016 2016
 National Merit Scholar 2013

PUBLICATIONS

2022

Eisner, B.*, Zhang, H.*, Held, D. (2022). FlowBot3D: Learning 3D Articulation Flow to Manipulate Articulated Objects. *Under submission to Robotics Science and Systems (RSS) 2022*. <https://sites.google.com/view/articulated-flowbot-3d>

Qureshi, M. N., **Eisner, B.**, Held, D. (2022). Deep Sequenced Linear Dynamical Systems for Manipulation Policy Learning. *Under submission to ICML 2022*. <https://sites.google.com/view/deep-sequenced-lds>

Narasimhan, G., Zhang, K., **Eisner, B.**, Lin, X., & Held, D. (2022) Self-supervised Transparent Liquid Segmentation for Robotic Pouring. **ICRA 2022**. <https://sites.google.com/view/transparentliquidpouring>

2021

Yang, D., Tosun, T., **Eisner, B.**, Isler, V., & Lee, D. (2021). Robotic Grasping through Combined

image-Based Grasp Proposal and 3D Reconstruction. **ICRA 2021**. <https://arxiv.org/abs/2003.01649>

2020

Simmons-Edler, R., **Eisner, B.**, Yang, D., Bisulco, A., Mitchell, E., Seung, S., & Lee, D. (2020). Reward Prediction Error as an Exploration Objective in Deep RL. **International Joint Conference on Artificial Intelligence 2020 (IJCAI-PRICAI2020)**. <https://arxiv.org/abs/1906.08189>

2019

Tosun, T., Mitchell, E., **Eisner, B.**, Huh, J., Lee, B., Lee, D., ... & Lee, D. (2019). Pixels to Plans: Learning Non-Prehensile Manipulation by Imitating a Planner. **IROS 2019**. <https://arxiv.org/abs/1904.03260>

Simmons-Edler, R.*, **Eisner, B.***, Mitchell, E.*, Seung, S., & Lee, D. (2019). Q-Learning for Continuous Actions with Cross-Entropy Guided Policies. **RL4RealLife Workshop, ICML 2019**. <https://arxiv.org/abs/1903.10605>

2016

Eisner, B., Rocktäschel, T., Augenstein, I., Bošnjak, M., & Riedel, S. (2016). emoji2vec: Learning emoji representations from their description. **Best Paper, SocialNLP Workshop, EMNLP 2016**. <https://arxiv.org/abs/1609.08359>

PRESENTATIONS	Mapping Your Brain with Deep Learning <i>Internal talk at Google NYC</i>	2017
	emoji2vec: Learning emoji representations from their description. <i>SocialNLP Workshop at EMNLP 2016</i>	2016