

Gokul Swamy

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EDUCATION

Carnegie Mellon University

PhD, Robotics

August 2020 - Present

University of California, Berkeley

M.S., Computer Science, Thesis: [Learning with Humans in the Loop](#)

August 2019 - May 2020

B.S., Electrical Engineering & Computer Science: GPA: 3.87, *High Honors*

August 2016 - May 2019

Select Classes: Machine Learning, Artificial Intelligence, Advanced Robotics, Computer Vision, Optimization, NLP, Linear Sys. Theory, AI Safety, Info. Theory, Algorithms, Networking, OS, Security

WORK EXPERIENCE

Aurora Innovation, Motion Planning Machine Learning Intern ([link](#))

May 2020 - August 2020

Berkeley AI Research, Graduate Student Researcher ([link](#))

January 2018 - May 2020

- Worked w/ Prof. Anca Dragan on comparing the task performance and sample complexity of increasingly structured models of human drivers as modeling assumptions are broken.
- Worked w/ Profs. Dragan and Sergey Levine on allowing one person to supervise and provide corrections for a fleet of learning robots, enabling scalable active imitation learning.
- Worked w/ Profs. Dragan and Levine on neural decoding from only brain-computer interface-based feedback via deep reinforcement learning and meta-learning.

NVIDIA, Autonomous Vehicles Perception Intern ([link](#))

May 2019 - August 2019

- Worked on single-image weakly-supervised 3D structure estimation of intersection entry/exit lines.
- Designed CNN to recover lines in 3D that learned from 2D key points and 3D geometric constraints.

SpaceX, Data Engineering Intern ([link](#))

May 2018 - August 2018

- Used hierarchical navigable small world graphs on top of word2vec to build approximate nearest neighbors engine to estimate operation durations, significantly outperforming experts ($r^2=0.9$).
- Created classical computer vision algorithm to detect not-for-flight tags and other flight risks.

Intuit, Software Engineering Intern ([link](#))

May 2017 - August 2017

SELECT PROJECTS (see [GitHub](#) and [website](#) for full list)

Generative Models for Pose Transfer, Graduate Computer Vision Class Project ([link](#))

- Built algorithm to transfer action (e.g. dance) from one subject to another (e.g. person to person).
- Used pose skeleton detection algorithm and k-NN to match frames to train a GAN (pix2pix).

Adversarial Attacks on Deep Reinforcement Learning, Graduate Deep Learning Class Project ([link](#))

- Used Fast Gradient Sign Method to attack DQN, PPO, TRPO, and A2C on several environments.

Take a Picasso, CalHacks 3.0 Project ([link](#))

- A robotic sketch artist that draws a physical portrait of user based on image taken by smartphone.
- Won Best Hardware, Best 3D Printed Hack, and a grant from Peter Thiel's 1517 Fund.

SELECT RESEARCH PROJECTS

- **Gokul Swamy**, Siddharth Reddy, Sergey Levine, Anca D. Dragan. *Scaled Autonomy: Enabling Human Operators to Control Robot Fleets*. Workshop paper at NeurIPS 2019. Published at ICRA 2020. ([arXiv](#))
- **Gokul Swamy**, Jens Schulz, Rohan Choudhury, Dylan Hadfield-Menell, Anca D. Dragan. *On the Utility of Model Learning in HRI*. ([arXiv](#))
- *In process of patenting/publishing work on 3D intersection structure estimation from summer at NVIDIA.*

STUDENT ORGANIZATIONS

Machine Learning @ Berkeley ([link](#))

August 2016 - Present

- Taught course twice on societal impacts and ethical considerations of AI, covering topics like automation, bias in AI, data privacy, artificially generated data, and human-compatible AI.
- Helped create course on full-stack self-driving and managed NLP consultant project for Intuit.

TEACHING

- Reader for CS 189 (Intro. to Machine Learning)
- TA for CS 188 (Intro. to Artificial Intelligence)