

Austin Patel

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EDUCATION

Stanford University Sep 2023 - Present

Ph.D. Electrical Engineering - Robotics, Computer Vision & Deep Learning

Coursework: Robot Manipulation, Robot Perception, NLP & Sensorimotor Robot Learning

University of California, Berkeley Aug 2019 - May 2023

B.S. Electrical Engineering and Computer Science, Honors Program, GPA: 3.98

Coursework: Computer Vision, Robotics, Deep RL, Machine Learning, Neural Networks, Artificial Intelligence, Graphics, Algorithms, OS, Databases, Convex Optimization & Probability

RESEARCH EXPERIENCE

Stanford Robotics and Embodied AI Lab (REAL) [Prof. Shuran Song] Sep 2023 - Present

- Researching cross-embodiment policy learning to enable robots of many different morphologies to complete tasks using a shared behavior model.
- Skills: Isaac Gym & Reinforcement Learning

Berkeley Artificial Intelligence Research (BAIR) [Prof. Jitendra Malik] Sep 2021 - May 2023

- Created vision method with PyTorch to reconstruct 3D hand-object poses from internet videos, which enabled a process for imitating human demonstrations with a robot arm in simulation using RL [1]
- Skills: 3D pose estimation (RGB to 3D), MANO hand model, differentiable rendering, joint optimization methods, video processing & 3D mesh processing/rendering

Berkeley Autonomous Microsystems Lab [Prof. Kristofer Pister] Sep 2019 - Sep 2021

- Built autonomous radio-controlled and solar-powered micro-robots with mechanical actuation [2] [3]
- Skills: MEMS, Solar-powered systems, ARM chip debugging, oscillator-free radio communication, embedded systems & C

PROFESSIONAL EXPERIENCE

Deep Learning Architect Intern - NVIDIA May 2023 - Sep 2023

- Integrating NVIDIA TensorRT acceleration with DeepSpeed and Accelerate frameworks to improve out-of-the-box multi-GPU performance of language models from Hugging Face Transformers
- Skills: DeepSpeed, Torch-TensorRT, Hugging Face Accelerate/Transformers, LLMs (T5, OPT), distributed inference, PyTorch & tensor/pipeline/data parallelism

Deep Learning Architect Intern - NVIDIA May 2022 - Aug 2022

- Conducted study on FP8 transformer network inference performance across GPU-stack on H100 GPU, which identified key performance bottlenecks with FP8 kernels and frameworks
- Skills: PyTorch, Nsight Systems/Compute (GPU kernel and memory profiling), mixed-precision inference, FP8 kernels & GPU micro-benchmarking

Hybrid Cloud Software Engineering Intern - Apple May 2021 - Aug 2021

- Developed GitHub bot to notify internal developers of cost analytics and cloud infrastructure changes when a pull request is made to a cloud infrastructure-as-code system
- Skills: GitHub API, SQL databases, REST APIs, Java, Go, Pulumi & cloud infrastructure

Cloud Applications Software Engineering Intern - Autodesk May 2020 - Aug 2020

- Implemented versioned file storage service with Java Spring Boot, which helped enable change history for design files in Autodesk services
- Skills: Spring Boot, Java, SQL, REST API, data platforms & database management

PUBLICATIONS

- [1] **A. Patel***, A. Wang*, I. Radosavovic, and J. Malik, “Learning to imitate object interactions from internet videos,” *arXiv:2211.13225*, 2022 [Webpage] [Paper]
- [2] A. Moreno, **A. Patel**, D. Teal, H. C. Gomez, A. Fearing, J. S. Rentmeister, J. Stauth, and K. Pister, “Small Autonomous Robot Actuator (SARA): A solar-powered wireless MEMS gripper,” in *2021 IEEE International Conference on Robotics and Automation (ICRA)*, 2021 [Paper]
- [3] A. Moreno, **A. Patel**, T. Yuan, A. Fearing, J. S. Rentmeister, J. Stauth, and K. Pister, “Solar-powered crystal-free 802.15.4 wireless temperature sensor,” in *2020 IEEE SENSORS*, 2020, pp. 1–4 [Paper]

TECHNICAL SKILLS

Deep Learning: PyTorch, Hugging Face (Transformers, Accelerate), TensorRT, TorchVision, DeepSpeed, Reinforcement Learning, NumPy, OpenCV & Nsight Systems/Compute

Robotics: Isaac Gym, Rethink Sawyer/Baxter robot arm, ROS, vacuum gripper, RL, TurtleBots, hand/object pose reconstruction, control systems, motion planning & localization

Software: Pulumi, Spring Boot, MongoDB, SQL, Docker

Programming Languages: Python, Java, C

TEACHING EXPERIENCE

Teaching Assistant for EECS16A - UC Berkeley Aug 2020 - May 2023

- Managed course logistics and staff hiring for 300 student class (2 semesters as co-head TA)
- Taught linear algebra and circuits in biweekly discussion section for 30 undergrads (for 6 semesters)

AWARDS

- **Outstanding Student Instructor Award** - Top 10% of Berkeley teaching assistants Mar 2023
- **Undergraduate Research Grant** - Hearts to Humanity Eternal (H2H8) Jul 2022
- **JUMP Undergraduate Research Grant** - Semi-Conductor Research Corporation Sep 2020
- **Leadership Award Scholarship** - Cal Alumni Association Aug 2019
- **Regents’ and Chancellor’s Scholar** - Scholarship for top 2% of Berkeley undergrads Feb 2019