

AKHIL BAGARIA

abagaria.github.io ◇ akhil.bagaria@brown.edu

EDUCATION

Brown University

2018-Present

Candidate for Doctor of Philosophy, Computer Science

Research area: Reinforcement Learning

Advisor: George Konidaris

Brown University

2018-2020

Master of Science, Computer Science

GPA: 4.0/4.0

Harvey Mudd College

2012-2016

Bachelor of Science, Engineering

GPA: 3.2/4.0; Graduated with Honors

INDUSTRY EXPERIENCE

Deepmind

June 2022 - Present

Research Scientist Intern

London, UK

- I worked with Tom Schaul in the RL team. I worked on goal-based exploration: when an environment has more states than an agent can visit in a lifetime, then the agent must discover a smaller subset of goals that aid exploration via goal-conditioned RL. Published at IJCAI 2023, Macau.

Apple Inc

August 2016 - July 2018

Sensor Algorithms Engineer

Cupertino, CA

- As part of the Multitouch team at Apple, I made improvements to the touch classification performance on Macbook trackpads (shipping on all Macbooks since 2016) and developed a new suite of text-editing gestures in iPad OS (shipping on all iPads since 2019).

Formlabs

May - July 2015

Electrical Engineering Intern

Somerville, MA

- Worked on the control system that shipped as part of the company's flagship Form2 3D printer.

PUBLICATIONS

Conference Publications

1. **Akhil Bagaria**, Ray Jiang, Ramana Kumar, Tom Schaul. Scaling Goal-based Exploration via Pruning Proto-goals. *International Joint Conference on Artificial Intelligence (IJCAI)*, 2023.
2. Sam Lobel*, **Akhil Bagaria***, George Konidaris. Flipping Coins to Estimate Pseudocounts for Exploration in Reinforcement Learning. *International Conference on Machine Learning (ICML)*, 2023, Honolulu, Hawaii. Selected for an **oral presentation**.
(*) Denotes joint first authors.
3. **Akhil Bagaria**, Jason Senthil, George Konidaris. Skill Discovery for Exploration and Planning using Deep Skill Graphs. *International Conference on Machine Learning (ICML)*, 2021.
Accepted for a Long Talk presentation (**Top 3% of submissions**).

4. **Akhil Bagaria**, Jason Senthil, Matthew Slivinski, George Konidaris. Robustly Learning Composable Options in Deep Reinforcement Learning. *International Joint Conference on Artificial Intelligence (IJCAI)*, 2021.
5. **Akhil Bagaria**, George Konidaris. Option Discovery using Deep Skill Chaining. *International Conference on Learning Representations (ICLR)*, 2020.
6. Sam Lobel, **Akhil Bagaria**, Cam Allen, Omer Gottesman, George Konidaris. Optimistic Initialization for Exploration in Continuous Control. *The AAAI Conference on Artificial Intelligence (AAAI)*, 2021.

Workshop Publications

1. **Akhil Bagaria**, Seungchan Kim, Alessio Mazzetto, Rafael Rodriguez-Sanchez. Replication of a Unified Bellman Optimality Principle Combining Reward Maximization and Empowerment. *Replication Challenge, Conference on Neural Information Processing Systems (NeurIPS)*, 2019.
2. **Akhil Bagaria**, Jason Crowley, Nicholas Lim, George Konidaris. Skill Discovery for Exploration and Planning using Deep Skill Graphs. *4th Lifelong Learning Workshop, International Conference on Machine Learning (ICML)*, 2020.
3. **Akhil Bagaria**, George Konidaris. Option Discovery using Deep Skill Chaining. *Deep RL Workshop, Conference on Neural Information Processing Systems (NeurIPS)*, 2019.

PROJECT EXPERIENCE

Team Leader, Hand Tremor Detection using Wearables. 2015-2016
Apple Inc & University of Utah

Undergraduate capstone project: we conducted a study with 20+ liver transplant patients at University of Utah to collect accelerometer data using Apple Watches. We then developed a tremor detection algorithm using signal processing and machine learning techniques.

Co-Founder & Team Leader, Mudd Aerial Systems Team 2015-2016
Harvey Mudd College, CA

Took apart an RC plane and made it autonomous by implementing an onboard closed-loop controller.

Co-Founder & Leader, Hardware Hackathon 2015, 2016
The Claremont Colleges, CA

Organized the Claremont Colleges' first hardware hackathon and raised \$5000+ of funding.

International Computer Engineering Experience (ICEX) Intern 2014-2015
Lab for Autonomous and Intelligent Robotics, Harvey Mudd College

Deployed autonomous underwater robots in volcanic lakes in Costa Rica to construct bathymetry maps and CO₂ emission models using custom CO₂ and pH sensors.

Shark Tracking 2015-2016
Lab for Autonomous and Intelligent Robotics, Harvey Mudd College

Identity-aware tracking of sharks in an aerial video taken off the coast of San Diego, CA.

AWARDS AND RECOGNITIONS

- **Engineering Honors.** Awarded by the Harvey Mudd College, Engineering Department for in-major academic excellence and community leadership.

- **J.R Phillips Award for Outstanding Experimental Technique and Engineering Judgment.** Awarded by Harvey Mudd College, Engineering Department.
- **Bill and Melinda Gates Foundation Scholarship.** Full tuition scholarship for attending college. Awarded to applicants who showcase **academic excellence, leadership potential** and come from **low-income families**.
- **Best All Round Student.** Awarded by the Indian national newspaper *The Telegraph* for all round excellence in high school.

PROGRAMMING LANGUAGE PROFICIENCY

Proficient in **Python**, C++, C. Proficient in PyTorch, familiar with Tensorflow.