# Anurag Ajay

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## Education

**Massachusetts Institute of Technology** September 2017 - Present
Ph.D. in Electrical Engineering and Computer Science GPA: 5.00/5.00
**MIT Presidential fellowship**

**University of California, Berkeley** August 2013 - May 2017
B.S. in Electrical Engineering and Computer Science GPA: 3.95/4.00
**Graduated with Highest Honors (top 3%)**

## Experience

**Improbable AI Lab** September 2019 - Present
(Adviser: Pulkit Agarwal)

- Working on learning visuomotor priors for solving long horizon tasks in environments with sparse rewards
- Working on learning features for out of distribution visual transfer for supervised learning and reinforcement learning

**Google Brain Research Internship** June 2020 - August 2020
(Advisers: Ofir Nachum and Sergey Levine)

- Worked on leveraging (unlabelled) offline data to extract skills which allows for improved offline reinforcement learning, online reinforcement learning and few-shot imitation learning.

**Learning and Intelligent Systems Group** September 2017 - September 2019
(Advisers: Leslie Kaelbling and Josh Tenenbaum)

- Worked on leveraging physics engine for dynamics model learning and control
- Worked on curiosity driven exploration for reinforcement learning in environment with sparse rewards

**Madry Lab** (with Aleksander Madry) March 2019 - September 2019

- Worked towards understanding the fundamentals of deep learning and on designing adversarially robust deep learning models.
- Worked on robust style transfer for images and videos

**Berkeley Artificial Intelligence Research Lab** October 2014 - May 2017
(Advisers: Pieter Abbeel and Sergey Levine)

- Worked on deep learning for state estimation
- Developed model-based sample efficient reinforcement learning algorithm

## Publications

**OPAL: Offline Primitive Discovery for Accelerating Offline Reinforcement Learning**
**Anurag Ajay**, Aviral Kumar, Pulkit Agrawal, Sergey Levine, Ofir Nachum.
Submitted to International Conference on Learning Representations (ICLR), Vienna, Austria, May 2021.

**Learning Action Priors for Visuomotor transfer**
**Anurag Ajay**, Pulkit Agrawal.
ICML Inductive biases, invariances and generalization in RL workshop, July 2020.

**Long-Horizon Prediction and Uncertainty Propagation with Residual Point Contact Learners**
Nima Fazeli, **Anurag Ajay**, Alberto Rodriguez.
IEEE International Conference on Robotics and Automation (ICRA), Paris, France, May 2020.

**Learning Skill Hierarchies from Predicate Descriptions and Self-Supervision**
Tom Silver*, Rohan Chitnis*, **Anurag Ajay**, Josh Tenenbaum, Leslie Pack Kaelbling.
AAAI Workshop on Generalization in Planning (GenPlan), 2020.

**Learning to Navigate Endoscopic Capsule Robots**
Mehmet Turan, Yasin Almalioglu, Hunter B Gilbert, Faisal Mahmood, Nicholas J Durr, Helder Araujo, Alp Eren Sar,**Anurag Ajay**, Metin Sitti.
Robotics and Automation Letters (RA-L), 2019.

**Combining Physical Simulators and Object-Based Networks for Control**
**Anurag Ajay**, Maria Bauza, Jiajun Wu, Nima Fazeli, Joshua B. Tenenbaum, Alberto Rodriguez, Leslie P. Kaelbling.
IEEE International Conference on Robotics and Automation (ICRA), Montreal, Canada, May 2019.

**Augmenting Physical Simulators with Stochastic Neural Networks: Case Study of Planar Pushing and Bouncing**
**Anurag Ajay**, Jiajun Wu, Nima Fazeli, Maria Bauza, Leslie P. Kaelbling, Joshua B. Tenenbaum, Alberto Rodriguez.
IEEE International Conference on Intelligent Robots and Systems (IROS), Madrid, Spain, October 2018.
**Best Paper for Cognitive Robotics**

**Reset-Free Guided Policy Search: Efficient Deep Reinforcement Learning with Stochastic Initial States**
**Anurag Ajay***, William Montgomery*, Chelsea Finn, Pieter Abbeel, Sergey Levine. IEEE International Conference on Robotics and Automation (ICRA), Singapore, May 2017.

**Backprop KF: Learning Discriminative Deterministic State Estimators**
Tuomas Haarnoja, **Anurag Ajay**, Sergey Levine, Pieter Abbeel.
Neural Information Processing Systems (NIPS), Barcelona, Spain, December 2016.

**Technical Skills** Python, Matlab, ROS, Caffe, Tensorflow, Pytorch, Spark, Java