

Nikhil Mishra

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Education

PhD, Computer Science *UC Berkeley*

Expected Graduation: May 2024

Advisor: Pieter Abbeel

MS, Electrical Engineering and Computer Science *UC Berkeley*

2017-2018

Advisor: Pieter Abbeel

BS, Electrical Engineering and Computer Science *UC Berkeley*

2014-2017

Graduated with Highest Honors (top 3% of class)

GPA: 3.953

Experience

Covariant *Research Scientist*

2018 - present

- Covariant develops AI for robotics applications in manufacturing and logistics. I was a founding research scientist and saw the company grow from 5 to 200+.
- Conducted AI research at the intersection of vision, robotics, and reinforcement learning. Research areas: object detection, 3D reconstruction, grasping, motion planning, video prediction.
- Led the Perception team as Tech Lead Manager (5 direct reports). Team responsible for fullstack ML, including research, data pipelines, model evaluation/deployment, internal tools.

OpenAI *Research Intern*

Fall 2017

- Advisor: John Schulman. Research areas: reinforcement learning, meta-learning, scaling Transformers

Google Brain *Research Intern*

Summer 2017

- Worked with the Google Brain Robotics team. Research areas: reinforcement learning, imitation learning.

Berkeley AI Research *Undergraduate Researcher*

2014-2017

- Advisor: Pieter Abbeel. Research areas: reinforcement learning, generative models, meta-learning.

UC Berkeley *Undergraduate Student Instructor*

2016-2017

- Taught weekly lab and discussion sections for introductory EECS classes.

Trooly *Software Engineering Intern*

Summer 2016

- Trooly performed automated screening and verification for financial institutions and peer-to-peer marketplaces, before it was acquired by AirBnB in 2017.
- Worked on feature extraction from web crawl data and trained models predicting user trustworthiness.

Publications

Closing the Visual Sim-to-Real Gap with Object-Composable NeRFs. Nikhil Mishra, Maximilian Sieb, Pieter Abbeel, Xi Chen. International Conference on Robotics and Automation (ICRA), 2024.

Convolutional Occupancy Models for Dense Packing of Complex, Novel Objects. Nikhil Mishra, Pieter Abbeel, Xi Chen, Maximilian Sieb. International Conference on Intelligent Robots and Systems (IROS), 2023.

Distributional Instance Segmentation: Modeling Uncertainty and High Confidence Predictions with Latent-MaskRCNN. YuXuan Liu, Nikhil Mishra, Pieter Abbeel, Xi Chen. International Conference on Robotics and Automation (ICRA), 2023.

Autoregressive Uncertainty Modeling for 3D Bounding Box Prediction. YuXuan Liu, Nikhil Mishra, Maximilian Sieb, Yide Shentu, Pieter Abbeel, Xi Chen. European Conference on Computer Vision (ECCV), 2022.

PixelSNAIL: An Improved Autoregressive Generative Model. Xi Chen, Nikhil Mishra, Mostafa Rohaninejad, Pieter Abbeel. International Conference on Machine Learning (ICML), 2018.

A Simple Neural Attentive Meta-Learner. Nikhil Mishra*, Mostafa Rohaninejad*, Xi Chen, Pieter Abbeel. International Conference on Learning Representations (ICLR), 2018.

Prediction and Control with Temporal Segment Models. Nikhil Mishra, Pieter Abbeel, Igor Mordatch. International Conference on Machine Learning (ICML), 2017.

Combining Model-Based Policy Search with Online Model Learning for Control of Physical Humanoids. Igor Mordatch, Nikhil Mishra, Clemens Eppner, Pieter Abbeel. International Conference on Robotics and Automation (ICRA), 2016.

Patents

Systems and methods for robotic picking. Yan Duan, Xi Chen, Mostafa Rohaninejad, Nikhil Mishra, YuXuan Liu, Andrew Vaziri, Haoran Tang. US Patent App 17/014,545, 2021.

Trajectory optimization using neural networks. Haoran Tang, Xi Chen, Yan Duan, Nikhil Mishra, Philipp Wu, Maximilian Sieb, Yide Shentu. US Patent App 17/193,820, 2021.

Training artificial networks for robotic picking. Yan Duan, Haoran Tang, Yide Shentu, Nikhil Mishra, Xi Chen. US Patent App 17/014,558, 2021..

Identifying scene correspondences with neural networks. Maximilian Sieb, Nikhil Mishra, Yan Duan. US Patent App 17/161,399, 2021..

Confidence-based segmentation of multiple units. YuXuan Liu, Xi Chen, Nikhil Mishra. US Patent App 17/161,344, 2021..

Confidence-Based Bounding Boxes For Three Dimensional Objects. YuXuan Liu, Xi Chen, Nikhil Mishra. US Patent App 17/161,297, 2021..

Three-dimensional computer vision system for robotic devices. Mostafa Rohaninejad, Nikhil Mishra, YuXuan Liu, Yan Duan, Andrew Vaziri, Xi Chen. US Patent App 17/014,321, 2021..