

Nitish R. Dashora

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EDUCATION

UC Berkeley (College of Engineering), Berkeley, CA August 2020 - August 2023
B.S. in Electrical Engineering & Computer Science (EECS); EECS Honors Student; GPA: 3.98/4.0, Dean's List, High Honors

The Ohio State University, Columbus, OH May 2019 - April 2020
Dual-Enrollment Student from Olentangy Liberty High School; GPA: 4.0/4.0, Salutatorian

Online Coursework January 2015 - August 2020
Remote Student on Udacity, Coursera, and Codecademy

- **Courses:** Machine Learning with TensorFlow on Google Cloud 5-Course Specialization (Google), Deep Learning 5-Course Specialization (Dr. Andrew Ng), Deep Learning (Dr. Vincent Vanhoucke), Intro to Machine Learning (Dr. Sebastian Thrun)

RESEARCH EXPERIENCE

UC Berkeley EECS Department October 2023 - Present
Junior Research Specialist

- Proposing projects, assisting with carrying out experiments, writing code, and writing papers under Prof. Sergey Levine
- Studying multi-robot skill acquisition and developing a subgoal generation system for online RL exploration guidance
- Using passive data for reward shaping through diffusion image editing and temporal-difference learning of goal reaching

Center for Human-Compatible AI June 2023 - October 2023
Research Intern

- Researched under Prof. Stuart Russell to study human-inspired exploration methods and skill discovery training for RL
- Proposed an approach for using Laplacian representations and skill-centric exploration for acquiring a hierarchical policy
- Wrote a first-author paper for explicitly composing state-covering skill DAGs in a reward-free way for search efficiency

Robotic AI & Learning Lab (Berkeley Artificial Intelligence Research) August 2020 - June 2023
Undergraduate Researcher

- Researched deep reinforcement learning, unsupervised pre-training, and robot autonomy under Prof. Sergey Levine
- Created a hybrid control system with deep imitative models and sensor fusion to improve out-of-distribution testing
- Implemented a risk-aware DAGger-style training system with an MPPI controller for autonomous vehicle racing
- Developed a soft-prompting technique for data-driven task adaptation and finetuning of navigational foundation models

Redwood Center for Theoretical Neuroscience August 2020 - June 2023
Undergraduate Researcher

- Researched interpretable unsupervised capsule representations for part-object hierarchies under Prof. Bruno Olshausen
- Developed variations of Lie Sparse Coding and Flow Capsules and created pooled deformation groups with RBMs
- Led a team of 5 and created 4 weeks of course content, lectures, and assignments for an AI Perception MOOC on EdX

NASA Jet Propulsion Laboratory at Caltech June 2021 - August 2021
Summer Undergraduate Researcher

- Developed a robotic visual perception framework for high speed planning which increased time-until-collision by 110%
- Wrote a third-authored internal paper with digital signal processing results on Random Forest to classify voice activity
- Presented real and simulated results for our goal-directed methods which improved rate of navigation success by 45%

Translational Data Analytics Institute at The Ohio State University August 2019 - April 2020
Natural Language Processing Research Assistant

- Worked under Prof. Raghu Machiraju to convert laboratory protocol text into parse-trees through self-attention models
- Created a biomedical language corpus through manual annotation to train our medical protocol translation system
- Helped to create new name-entity labels and a new partial temporal ordering schema for cross-sentence protocol trees

ORAL PRESENTATIONS

Dashora N, Leopold H, Atha D, Agha-Mohammadi A. Hybrid Imitative Planning on Hardware. Oral Presentation at: NASA Jet Propulsion Laboratory NeBula Speaker Series; 2021 Nov 10; Berkeley, CA.

Dashora N, Leopold H, Atha D, Agha-Mohammadi A. Hybrid Imitative Planning on Hardware. Oral Presentation at: Astronaut Scholar Technical Conference; 2022 Aug 26; Orlando, FL.

POSTER PRESENTATIONS

Shah D*, Sridhar A*, **Dashora N***, Stachowicz K, Black K, Hirose N, Levine S. 2023. Vint: A large-scale, multi-task visual navigation backbone with cross-robot generalization. 2023 BayLearn - Machine Learning Symposium (Oral Acceptance); Oakland, CA.

Shah D*, Sridhar A*, **Dashora N***, Stachowicz K, Black K, Hirose N, Levine S. 2023. Vint: A large-scale, multi-task visual navigation backbone with cross-robot generalization. 2023 NeurIPS 6th Robot Learning Workshop (Demo Acceptance); New Orleans, LA.

Dashora N*, Shin D*, Shah D, Leopold H, Fan D, Agha-Mohammadi A, Rhinehart N, Levine S. Hybrid Imitative Planning with Geometric and Predictive Costs in Off-road Environments. NeurIPS 4th Robot Learning Workshop; Online. 2021.

Dashora N*, Shin D*, Shah D, Leopold H, Fan D, Agha-Mohammadi A, Rhinehart N, Levine S. Hybrid Imitative Planning with Geometric and Predictive Costs in Off-road Environments. NeurIPS Deep Reinforcement Learning Workshop; Online. 2021.

Dashora N, Alberti S, Buracas D, Olshausen B. Hierarchical Part Learning and Local Capsule Hierarchies. Berkeley EECS and Research Symposium; Berkeley, CA. 2021.

Buracas D, Workman K, **Dashora N**, Smolin M. Semantic Convolutions through Part-Object Capsule Routing. Student Applied Statistics Research Symposium; Berkeley, CA. 2020.

PAPERS

Dashora N*, Shin D*, Shah D, Leopold H, Fan D, Agha-Mohammadi A, Rhinehart N, Levine S. 2021. Hybrid Imitative Planning with Geometric and Predictive Costs in Off-road Environments. 2022 International Conference on Robotics and Automation.

Dashora N*, Jung S*, Ibars V, Lerner O, Jung C, Shah D, Rhinehart N, Levine S, Agha-Mohammadi A. 2022. Imitative Models for Passenger-Scale Autonomous Off-Road Driving. 2023 International Conference on Intelligent Robots and Systems Workshop.

Shah D*, Sridhar A*, **Dashora N***, Stachowicz K, Black K, Hirose N, Levine S. 2023. ViNT: A Foundation Model for Visual Navigation. 2023 Conference on Robot Learning ([Oral Acceptance](#)).

Anonymous Authors. 2023. Deep Hierarchical Laplacian Skill Discovery. Preprint.

PROGRAMMING EXPERIENCE

Amazon

May 2022 - August 2022

Software Development Intern

- Worked on Amazon Web Services Elastic Block Store to optimize big data Spark and Hadoop jobs for S3 snapshot analysis
- Developed a Spark App to shard large parquet datasets for distributed compute load-balancing across many EC2 nodes
- Achieved 300% performance gain with my multi-cluster system to provision and launch Elastic MapReduce cluster jobs

aBioBot

June 2019 - August 2020

Applied Robotics and AI Intern

- Increased our end-to-end REST-API video streaming framerate, with the use of WebSocket and cloud computing, by 75%
- Improved accuracy for our NodeJS object-detection model, through TensorFlow and asynchronous Python, by 50%
- Developed new JavaScript features on the UI for video stream options, upload tools, and colony-picking camera protocols

Discovery Lab - Global

June 2019 - August 2019

Software Development Intern

- Optimized step-time of a NumPy-based, AWS reinforcement learning network, with TensorFlow and Keras, by 12%
- Created a presentation for IEEE NAECON 2019 and achieved the "Top Student" award out of 75 undergraduate students
- Designed an AI lecture series for incoming students and gave presentations about the mathematical components of AI

ENTREPRENEURSHIP EXPERIENCE

Schmidt Futures

January 2021 - August 2021

Educational Data Science Fellow

- Implemented ML algorithms for tracing knowledge and interpreting natural language to adaptively tutor students
- Pitched an AI communications platform to Schmidt Futures for enabling high school students to engage in clubs

CITRIS Foundry

August 2020 - December 2020

XLAB Challenge Winner

- Designed a machine learning algorithm for plant and plant disease identification for precision agriculture technologies
- Prototyped a biodegradable soil sensor for plant monitoring and interviewed farmers for market placement
- Pitched idea to CITRIS Institute, won \$3000 competing against other teams, and was invited to the CITRIS Incubator

Berkeley Student Entrepreneurship Program

August 2020 - December 2020

Program Incubator Student

- Created an AI-powered security system and designed a business plan under mentorship across this 10-week program

TEACHING

CS 188 - Introduction to Artificial Intelligence

Jan 2022 - May 2023

Undergraduate Student Instructor

- Taught weekly discussion sections, graded exams and homework, and held office hours for an 800+ student course

EECS 16B - Designing Information Devices and Systems II

August 2021 - Dec 2021

Reader

- Graded homeworks, graded term papers, proctored exams, and offered assignment feedback to students

CS 70 - Discrete Mathematics and Probability Theory

Jan 2021 - May 2021

Academic Intern

- Assisted student instructors in running discussion sections and explained solutions 1-on-1 to students

LEADERSHIP AND COMMUNITY OUTREACH

Machine Learning @ Berkeley, Berkeley, CA

August 2020 - May 2023

Education and Outreach Officer

- Organized a mentorship program with 40 students to introduce underrepresented students to machine learning research
- Managed club recruitment for over 350 applicants and assisted the execution of a new-member AI education program
- Developed a research-grade code repository for Stacked Capsule Autoencoder part-object detection and part illustration

Engineering Student Council, Berkeley, CA

August 2020 - August 2021

External Vice President Committee

- Co-created the Free Menstrual Product Initiative to provide free hygienic products to all students funded by donations
- Created the Blue & Gold Program, a school-supported affiliation program to encourage healthy and inclusive club culture
- Organized the College of Engineering Voting Workshop for all engineering students and increased attendance by 100%

Center of Science and Industry, Columbus, OH

June 2014 - June 2018

305 Hour Volunteer

- Presented 13 different scientific experiments to public audiences as large as 100 people, and won a White Star Status

Bharatiya Hindu Temple, Powell, OH

January 2018 - June 2018

124 Hour Volunteer

- Taught a health course to 20 elementary school students and ran a residential youth cultural camp with 200+ children

KUMON Tutoring, Powell, OH

June 2016 - Aug 2018

125 Hour Volunteer

- Graded and provided 1-on-1 tutoring to students from 6-16 years of age in mathematics and English language

AWARDS & HONORS

EECS Evergreen Undergraduate Research Award

June 2023

Awarded by UC Berkeley Electrical Engineering and Computer Sciences Department

- Recognizes your initiative in engaging in research as an undergraduate and your academic accomplishments.

2023 Goldwater Scholar

April 2023

Awarded by Barry Goldwater Scholarship & Excellence in Education Foundation

- The Goldwater Scholarship, one of the oldest and most prestigious national scholarships in STEM in the United States, seeks to identify, encourage, and financially support college sophomores and juniors who show exceptional promise of becoming this Nation's next generation of research leaders in these fields. (2023 award declined from medical leave)

2022 and 2023 Astronaut Scholar

August 2022

Awarded by Astronaut Scholar Foundation

- Astronaut Scholarships are awarded to students in their junior or senior year of college studying STEM with the intent to pursue research or advance their field upon completion of their final degree. Astronaut Scholars are among the best minds in STEM who show initiative, creativity, and excellence in their field. (2023 award declined from medical leave)

EECS Honors Program

January 2022

Awarded by UC Berkeley Electrical Engineering and Computer Sciences Department

- The EECS Honors Program is designed to provide very talented undergraduate students interested in undergraduate research. Honors students pursue an academic concentration outside of the department and engage in research.

Leadership Award

September 2020, October 2021

Awarded by Cal Alumni Association

- The Leadership Award is a one-year \$2000, merit-based scholarship that recognizes undergraduate students at UC Berkeley who demonstrate innovative leadership impacting their academic, work, or community environments.

Summer Undergraduate Research Fellowship Award

May 2021

Awarded by NASA and Caltech

- Awarded \$6500 in funding through a fellowship program at Caltech and NASA Jet Propulsion Laboratory.

Tau Beta Pi Honors Society

February 2021

Awarded by Tau Beta Pi, California Alpha Chapter

- Tau Beta Pi is the oldest national engineering honor society, and one of the most nationally recognized societies.

Generation Change Scholar

May 2020

Awarded by University of California, Berkeley

- The Generation Change scholarship is a \$20000 merit scholarship offered to selected undergraduates. It is in recognition of students with the potential to leverage a UC Berkeley education to change their world for the better.

National Merit Scholarship

May 2020

Awarded by National Merit Scholarship Corporation

- The National Merit Scholarship honors the top 0.5% of PSAT test-takers examined on mathematics, English, and reading. I was the recipient of a Corporate-sponsored scholarship valued at \$4000.