Nishant Kheterpal

nishantkheterpal@gmail.com
734-205-8574

Education

University of Michigan Began Fall 2020

- *PhD* in Robotics, advised by Gabor Orosz and Jean-Baptiste Jeannin
- Emphasis on formal verification of vehicle control systems

University of California, Berkeley - GPA: 3.85/4.0 Graduated Fall 2018

- *Bachelors of Science* in Electrical Engineering and Computer Sciences
- Coursework in artificial intelligence, machine learning, vehicle dynamics, optimization, probability, controls, data science, computer architecture, algorithms, discrete math, linear algebra

Publications

N. Kheterpal, E. Vinitsky, C. Wu, A. Kreidieh, K. Jang, K. Parvate, A. Bayen, "Flow: Open Source Reinforcement Learning for Traffic Control." *Workshop on Machine Learning Open-Source Software, NeurIPS,* 2018.

E. Vinitsky, A. Kreidieh, L. Le Flem, **N. Kheterpal**, K. Jang, F. Wu, R. Liaw, E. Liang, A. Bayen, "Benchmarks for Reinforcement Learning in Mixed-Autonomy Traffic." *Conference on Robot Learning*. 2018.

N. Kheterpal, K. Parvate, C. Wu, A. Kreidieh, E. Vinitsky, A. Bayen, "Flow: Deep Reinforcement Learning for Control in SUMO", *SUMO User Conference,* 2018.

C. Wu, K. Parvate, **N. Kheterpal**, L. Dickstein, A. Mehta, E. Vinitsky, A. Bayen, "Framework for Control and Deep Reinforcement Learning in Traffic." *Intelligent Transportation Systems (ITSC), 2017 IEEE 20th International Conference on.* IEEE, 2017.

Work Experience

Uber ATG - Research Intern 3/2020 - 8/2020

- Developed ride comfort metrics for autonomous vehicles to improve passenger experience
- Productionized safety metrics using Traffic Conflict Technique with research staff
- Researcher working with Dr. Ersin Yumer and Professor Raquel Urtasun

Ike Robotics - Simulation Software Engineer 1/2019 - 1/2020

- Developed simulation platform in Unreal Engine to test and validate software performance for automated trucking
- Built simulated intelligent actors and integrated control & dynamics into simulation
- Implemented distributed cloud simulation in Google Cloud Platform using Docker and Kubernetes

Berkeley Deep Drive - Undergraduate Researcher 1/2017 - 12/2018

- Built Flow, an open-source framework enabling deep reinforcement learning for traffic control using vehicle simulator SUMO, RLlib, rllab, and Amazon Web Services
- Designed RL experiments in Flow to train vehicle and infrastructure agents to improve traffic flow in congested traffic scenarios
- Studied gradient accuracy, training time, and reward in deep reinforcement learning methods

General Motors - Electrification Controls Intern 6/2017 - 8/2017

- Validated power consumption models for electric vehicles using experimental data

- Developed and troubleshot Simulink models for electrified powertrain energy consumption

Apple - Emerging Technologies Intern 5/2016 - 8/2016

- Developed interactive Matlab tools to analyze and summarize spatial and temporal datasets
- Streamlined a signal simulation pipeline and created GUIs for rapid signal generation
- Summarized work in final presentation, well-received by 20+ cross-functional team members

University of Michigan Transportation Research Institute - Research Assistant 7/2013 - 8/2015

- Analyzed sensor data using SQL and plotting tool Igor to evaluate active safety performance
- Built Matlab tools to automatically characterize heavy truck suspension behavior from test data

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Teaching

Data 8, UC Berkeley - Lead Undergraduate Student Instructor 8/2018 - 12/2018

- Pedagogy lead supervising a team of 4 instructors developing course materials for 1200+ students
- Presented weekly to 40+ instructors regarding course material and educational strategy
- Taught 60+ students weekly in two lab sections applying course material
- Course evaluations consistently above average (personal: 4.6/5, average: 4.3/5)

Data 8, UC Berkeley - Undergraduate Student Instructor 8/2016 - 5/2018

- Primary lab section instructor teaching computational and inferential thinking with real-world data
- Member of teaching staff responsible for developing course and studying pedagogy

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Honors and Awards

NSF Graduate Research Fellowship Honorable Mention 2021

Berkeley Engineering Honors to Date - Top 20% GPA Fall 2015 - Fall 2018

Bronze Medal Winner - Siemens-UC Berkeley Hackathon 2018

Outstanding Graduate Student Instructor Award - Top 9% of GSIs Spring 2018

Member, Eta Kappa Nu, Mu (Berkeley) Chapter - Top 25% of EECS Majors Fall 2016

College of Engineering Dean's List - Top 10% GPA Fall 2015, Fall 2016, Spring 2017

Michigan Mathematics Prize Competition - Top 100 2015
