Katie Luo

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EDUCATION

Cornell University *September 2020 - Present*
PhD Student
College of Computing and Information Science, Machine Learning Focus

University of California, Berkeley *August 2018 - May 2019*
Master of Science, advised by Prof. Sergey Levine GPA: 4.00/4
Electrical Engineering and Computer Sciences Major

University of California, Berkeley *August 2015 - May 2018*
Bachelor of Science, Graduated with High Honors GPA: 3.94/4
Electrical Engineering and Computer Sciences Major

PUBLICATIONS

Yurong You*, **Katie Z Luo***, Cheng Perng Phoo, Wei-Lun Chao, Wen Sun, Bharath Hariharan, Mark Campbell, Kilian Q. Weinberger, *"Learning to Detect Mobile Objects from LiDAR Scans Without Labels"* (CVPR 2022)

Carlos Andres Diaz, Youya Xia, Yurong You, Jose Nino, Junan Chen, Josephine Monica, Xiangyu Chen, **Katie Z Luo**, Yan Wang, Marc Emond, Wei-Lun Chao, Bharath Hariharan, Kilian Q. Weinberger, Mark Campbell, *"Ithaca365: Dataset and Driving Perception under Repeated and Challenging Weather Conditions"* (CVPR 2022)

Yurong You, **Katie Luo**, Xiangyu Chen, Junan Chen, Wei-Lun Chao, Wen Sun, Bharath Hariharan, Mark Campbell, Kilian Q Weinberger, *"Hindsight is 20/20: Leveraging Past Traversals to Aid 3D Perception"* (ICLR 2022)

Katie Luo*, Guandao Yang*, Wenqi Xian, Harald Haraldsson, Bharath Hariharan, Serge Belongie, *"Stay Positive: Non-Negative Image Synthesis for Augmented Reality"* (CVPR 2021 – *Oral*)

Katie Luo*, Sergio Casas*, Yuwen Xiong, Wenyuan Zeng, Renjie Liao, Raquel Urtasun, *"Safety-Oriented Pedestrian Motion and Scene Occupancy Forecasting"* (IROS 2021)

Sergio Casas*, Cole Gulino*, Simon Suo*, **Katie Luo**, Renjie Liao, Raquel Urtasun, *"Implicit Latent Variable Model for Scene-Consistent Motion Forecasting"* (ECCV 2020)

Justin Fu, **Katie Luo**, Sergey Levine, *"Learning Robust Rewards with Adversarial Inverse Reinforcement Learning"* (ICLR 2018)

TECHNICAL REPORTS AND WORKSHOP PUBLICATIONS

Yu Shen, **Katie Luo**, Guandao Yang, Harald Haraldsson, Serge Belongie, *Residual Aligned: Gradient Optimization for Non-Negative Image Synthesis* (ICCV 2021 Workshop)

Katie Luo (2019). *Goal-Induced Inverse Reinforcement Learning* (Master's Thesis). EECS Department, University of California, Berkeley. (No. UCB/EECS-2019-81)

RESEARCH EXPERIENCE

ML Core Lab August 2020 - Present
Graduate Student Researcher *Ithaca, USA*

- Advised by Prof. Kilian Weinberger, researching methods for autonomous driving with localized data
- Developing method for self-supervised identification of foreground background object separation, and working with a team to release a self-driving dataset

Pioneer Center for AI June 2022 - August 2022
Visiting Student Researcher *Copenhagen, Denmark*

- Advised by Prof. Serge Belongie, head of the Pioneer Center for AI in Copenhagen, studying computer vision with an emphasis on self-driving vehicles

SE(3) Computer Vision Group at Cornell Tech June 2020 - September 2021
Graduate Student Researcher *New York, USA*

- Advised by Prof. Serge Belongie, researching applied computer vision, with an emphasis on augmented reality (AR) devices
- Researched image generation for optical see-through AR devices, where generation is constrained by light from the real world. Developed a novel optimization procedure that achieves state-of-the-art results, findings submitted to CVPR 2021

Uber Advanced Technologies Group (acquired by Aurora) June 2019 - June 2020
AI Resident *Toronto, Canada*

- Advised by Prof. Raquel Urtasun for the Uber AI Residency program, a highly selective year-long industry research program, developing cutting-edge algorithms for autonomous driving
- Developed joint detection and motion forecasting algorithm for pedestrians and cars using graph neural networks and variational inference, worked towards IROS and ECCV submissions

Berkeley Robotic and AI Learning Lab August 2017 - May 2019
Student Researcher *Berkeley, USA*

- Advised by Prof. Sergey Levine, researching state-of-the-art deep reinforcement learning algorithms
- Developed novel inverse reinforcement learning using maximum entropy framework and deep adversarial networks to learn reward distributions, findings published at ICLR
- Created an algorithm capable of learning and completing language commands on web tasks by researching the intersection of imitation learning and natural language processing, results in Master's Thesis

TEACHING EXPERIENCE

Introduction to Machine Learning, CS4780 August 2021 - December 2021
Graduate Student Instructor

- Helped run the course as one of forty instructors of a class of about 400 students
- Created course content along with the Professors and two other graduate teaching assistants including homeworks and exams

Intro. to Artificial Intelligence, CS188
Graduate Student Instructor August 2018 - May 2019
Undergraduate Student Instructor January 2018 - May 2018

- Helped run the course as one of twenty instructors of a class of 600 to 800 students, varying by semester
- Led exam creation and organize student examinations for class midterms and finals across multiple locations, as well as led grading sessions
- Taught discussion sections, held office hours, and recorded and edited videos for discussion material

Data Structures, CS61B January 2017 - May 2017
Tutor

- Worked as a tutor for the data structures class with over 1000 students
- Held two tutoring sessions each week, went over example questions covering course material
- Assisted in labs and office hours, clarified data structure concepts, and debugged students' code

INDUSTRY EXPERIENCE

Facebook – FAIAR May 2021 - August 2021
Research Intern

- Researched the fields of self supervised learning and neural style transfer with the Facebook AI Integrity team, created and led a project combining the two fields
- Designed and trained an embedding space that implicitly learned art styles via self supervised methods, which was used for style transfer to achieve high perceptual quality results

Google – YouTube May 2018 - August 2018
Machine Learning Intern

- Designed a metric for the Trust & Safety team to flag German hate speech comments with keyword based rules, which achieved over 90% recall and was used to automatically flag comments for monitoring
- Designed and trained machine learning models to filter spam for the Youtube comment section reaching over 98% precision using Keras machine learning framework, which were deployed into production

Wish, Context Logic May 2017 - August 2017
Data Science Intern

- Built and trained a model which analyzed Facebook comments sentiment to determine ad performance, which reduced the time required to detect poor performing ads from a few weeks to a couple of days
- Developed novel ways of detecting anomalies and abrupt changes in Wish's time series data, and used TensorFlow and pre-trained neural nets to assign categories to Wish product images

IBM May 2016 - August 2016
Software Intern

- Designed and created a standardization system for the team product's event-types
- Coded the web backend for the Event Taxonomy project, which was deployed in the next product cycle

PROJECTS

Turtlebot Maze Navigation Spring 2021

- Designed and created the initialization routine, localization, and planning for a TurtleBot to navigate arbitrary mazes using core robotic concepts such as particle filtering localization and motion path planning
- Implemented using MatLab and ran in a real world robot setting

Baxter Checkers Spring 2017

- Enabled a Baxter robot to play an intelligent game of checkers against human opponents by implementing sensing, planning, and controls using Robot Operating System and mini-max AI algorithm
- Implemented using python with ROS, results: sites.google.com/view/ee-106a-check-this-out/

TECHNICAL STRENGTHS

Computer Languages	Python, Java, C, SQL, Lisp, HTML/CSS, JavaScript
Software & Libraries	PyTorch, TensorFlow, Keras, ROS, OpenCV
Concepts	Machine Learning, Computer Vision, Reinforcement Learning, Robotics

Relevant Coursework Theoretical Reinforcement Learning (CS6789), Autonomous Mobile Robots (MAE 5180), Intro to AI (CS188), Machine Learning (CS189), Intro to Robotics (EE C106A), Convex Optimization (EE227C), Computer Vision (EE280), Deep Reinforcement Learning (CS294-112), Concepts of Probability (STAT134)

HONORS AND AWARDS

Fall 2020	Recipient of the Cornell University Fellowship
Fall 2018	Recipient of the Google Grace Hopper Grant
Fall 2017	Recipient of the UC Berkeley Grace Hopper Scholarship
Fall 2016	Member of the Eta Kappa Nu (HKN) EECS honor society

EXTRA-CURRICULARS

Industrial Relations Assistant Officer for UC Berkeley HKN honor society

Dance member of FeiTian, UC Berkeley's only Chinese heritage dance group

Discovered interest in rock climbing, obtained top-rope belay certification!