Christopher Xie

CONTACT INFORMATION

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RESEARCH INTERESTS

My interests span the intersection of machine learning, computer vision, and robotics. In particular, I am interested in investigating visual representations that enable robots to perform physical tasks such as object manipulation in unstructured and cluttered scenes.

EDUCATION

Ph.D., University of Washington — September 2015 - Present
Computer Science and Engineering

Master of Science, University of Washington — June 2017
Computer Science and Engineering

Bachelor of Science, University of California, Berkeley — May 2015
Electrical Engineering and Computer Science

PUBLICATIONS

Unseen Object Instance Segmentation for Robotic Environments.
Christopher Xie, Yu Xiang, Arsalan Mousavian, Dieter Fox.
To appear in IEEE Transactions on Robotics (T-RO), 2021.

Learning RGB-D Feature Embeddings for Unseen Object Instance Segmentation.
Yu Xiang, Christopher Xie, Arsalan Mousavian, Dieter Fox.
Conference on Robot Learning - CoRL, 2020.

Amodal 3D Reconstruction for Robotic Manipulation via Stability and Connectivity.
William Agnew, Christopher Xie, Aaron Walsman, Octavian Murad, Caelen Wang, Pedro Domingos, Siddhartha Srinivasa.
Conference on Robot Learning - CoRL, 2020. Oral Presentation.
ICML Workshop on Object-Oriented Learning, 2020. Spotlight.

The Best of Both Modes: Separately Leveraging RGB and Depth for Unseen Object Instance Segmentation.
Christopher Xie, Yu Xiang, Arsalan Mousavian, Dieter Fox.
Conference on Robot Learning - CoRL, 2019.

Object Discovery in Videos as Foreground Motion Clustering.
Christopher Xie, Yu Xiang, Zaid Harchaoui, Dieter Fox.
IEEE Conference on Computer Vision and Pattern Recognition - CVPR, 2019.

A Simple Adaptive Tracker with Reminiscences.
Christopher Xie, Emily Fox, Zaid Harchaoui.
IEEE Int. Conf. on Robotics and Automation - ICRA, 2019.

NonSTOP: A NonSTationary Online Prediction Method for Time Series.
Christopher Xie, Avleen Bijral, Juan Lavista Ferres.
IEEE Signal Processing Letters, 2018.

A Unified Framework for Long Range and Cold Start Forecasting of Seasonal Profiles in Time Series.

Christopher Xie, Alex Tank, Alec Greaves-Tunnell, Emily Fox.
arXiv:1710.08473, 2017.
NeurIPS Time Series Workshop, 2016. Best Oral Presentation.

Model-based Reinforcement Learning with Parametrized Physical Models and Optimism-Driven Exploration.
Christopher Xie, Teodor Moldovan, Sergey Levine, Sachin Patil, Pieter Abbeel.
IEEE Int. Conf. on Robotics and Automation - ICRA, 2016.

Toward Asymptotically Optimal Motion Planning for Kinodynamic Systems using a Two-Point Boundary Value Problem Solver.
Christopher Xie, Jur van den Berg, Sachin Patil, Pieter Abbeel.
IEEE Int. Conf. on Robotics and Automation - ICRA, 2015.

Research Experience

University of Washington – Seattle, WA — September 2015 - Present

Graduate Research Assistant.
Developed novel deep architectures for unseen object instance segmentation.
Investigated 3D representations for robot manipulation.
Explored prediction methods for online and cold start time series.

Google – Seattle, WA — July 2020 - Present

Research Intern/Student Researcher, Google Research
Working on 3D category-level object modeling.

NVIDIA – Seattle, WA — March 2018 - September 2018

Robotics Research Intern, NVIDIA Robotics Research Lab
Worked on discovering unseen objects in novel environments.

Microsoft – Redmond, WA — June 2016 - September 2016

Research Intern, Consumer Data and Analytics
Worked on Online Learning methods for Forecasting Nonstationary Time Series.

Google – Mountain View, CA — May 2015 - August 2015

Software Engineering Intern, Project Aura
Worked on Google Glass (now known as Project Aura).

University of California, Berkeley – Berkeley, CA — September 2013 - August 2015

Undergraduate Research Assistant
Developed novel motion planning and model-based reinforcement learning algorithms by exploiting recent tools such as sequential convex programming and optimism-driven exploration.

eBay, Inc. – San Jose, CA — May 2013 - August 2013

Applied Research Intern, Trust Science
Trained neural network and decision tree models to classify fraudulent activity using features extracted from clickstream data only. Optimized them to prevent loss from fraud.

International Computer Science Institute – Berkeley, CA — April 2012 - April 2013

Student Researcher, Artificial Intelligence Group
FrameNet: Developed software to collect crowdsourced data from Amazon Mechanical Turk.
MetaNet: Collaborated with linguists to create a Russian metaphor search using parsed Russian sentences to extract verb-noun relations and clustering algorithms to search for potential new metaphors.

Invited Talks

Invited Panelist at the *Object Representations for Learning and Reasoning Workshop at NeurIPS, 2020.*

Teaching Robots to be as Smart as Infants. *Honda Research Institute Curious Minded Machines Workshop, 2019.*

A Unified Framework for Missing Data and Cold Start Prediction for Time Series Data.*NeurIPS Time Series Workshop, 2016.*

Teaching Experience

University of Washington – Seattle, WA

Teaching Assistant, CSE571: Robotics — Spring 2020
Teaching Assistant, Machine Learning Coursera Specialization — Winter 2016

University of California, Berkeley – Berkeley, CA

Teaching Assistant, CS189: Introduction to Machine Learning — Spring 2014, Spring 2015

Honors and Awards

ICRA 2019 RAS Travel Award — 2019
Best Oral Presentation at NIPS 2016 Time Series Workshop — 2016
National Defense Science and Engineering Graduate (NDSEG) Fellowship — 2016
CSE Educators Endowed Fellowship in Computer Science & Engineering (UW) — 2015
Draper Laboratory Fellowship (declined) — 2015
Eta Kappa Nu Membership
Student Member of IEEE

Advising

Yang Wang (UW undergrad, Sept 2018 - June 2019)
Jason Xie (UW undergrad, Sept 2019 - June 2020)
Mino Nakura (UW undergrad, Sept 2020 - Present)

Professional Activities

Paper Reviewing:
IEEE Conference on Computer Vision and Pattern Recognition (CVPR)
International Journal of Computer Vision (IJCV)
IEEE International Conference on Robotics and Automation (ICRA)
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
Neural Information Processing Systems (NeurIPS)
International Conference on Machine Learning (ICML)
International Conference on Learning Representations (ICLR)

Hobbies

Taekwondo: Received medals from many national and international tournaments. Member of the Alternate Junior National Team in 2010.
Music: Played keyboard in multiple bands, performed all over the Bay Area.