Danfei Xu

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Employment

Georgia Institute of Technology (Atlanta, GA) Aug. 2022 - Present

- Assistant Professor, School of Interactive Computing

NVIDIA Corporation (Santa Clara, CA) Sep. 2021 - Present

- Research Scientist, NVIDIA AI Research

Education

Stanford University, Stanford, CA, USA

Ph.D. in Computer Science (Sep. 2021)

Columbia University, New York, NY, USA

B.S. in Computer Science, *magna cum laude* (May 2015)

Conference Publications (Chronological)

Y. Cao, C. Xiao, A. Anandkumar, D. Xu, M. Pavone, AdvDO: Realistic Adversarial Attacks for Trajectory Prediction *European Conference on Computer Vision (ECCV)* 2022.

C. Wang, D. Xu, L. Fei-Fei, Generalizable Task Planning through Representation Pretraining, *IEEE Robotics and Automation Letters (RA-L)* 2022.

A. Mandlekar, D. Xu, J. Wong, S. Nasiriany, C. Wang, R. Kulkarni, L. Fei-Fei, S. Savarese, Y. Zhu, R. Martin Martin, What Matters in Learning from Offline Human Demonstrations for Robot Manipulation, *Conference on Robot Learning (CoRL)* 2021.

C. Wang, C. D'Arpino, D. Xu, K. Liu, S. Savarese, Co-GAIL: Learning Diverse Strategies for Human-Robot Collaboration, *Conference on Robot Learning (CoRL)* 2021.

C. Wang*, R. Wang*, A. Mandlekar, L. Fei-Fei, S. Savarese, D. Xu, Generalization Through Hand-Eye Coordination: An Action Space for Learning Spatially-Invariant Visuomotor Control, *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)* 2021.

D. Xu, A. Mandlekar, R. Martin Martin, Y. Zhu, S. Savarese, L. Fei-Fei, Deep Affordance Foresight: Planning Through What Can Be Done in the Future, *International Conference on Robotics and Automation (CoRL)* 2021.

D. Xu, M. Denil, Positive-Unlabeled Reward Learning, *Conference on Robot Learning (CoRL)* 2020.

C. Chang, DA. Huang, D. Xu, Ehsan Adeli, Li Fei-Fei, Juan Carlos Niebles, Procedure Planning in Instructional Videos, *16th European Conference on Computer Vision (ECCV)* 2020.

D. Xu*, A. Mandlekar*, R. Martin Martin, S. Savarese, L. Fei-Fei, GTI: Learning to Generalize Across Long-Horizon Tasks from Human Demonstrations, *Robotics: Science and Systems (RSS)* 2020.

W. Chen, R. Martin Martin, D. Xu, J. Lv, C. Lu, L. Fei-Fei, S. Savarese, Y. Zhu 6-PACK: Category-level 6D Pose Tracker with Anchor-Based Keypoints, *International Conference on Robotics and Automation (ICRA)* 2020.

D. Xu, R. Martin-Martin, , DA. Huang, Y. Zhu, S. Savarese, L. Fei-Fei, Regression Planning Networks, *Thirty-third Conference on Neural Information Processing Systems (NeurIPS)* 2019.

DA. Huang, D. Xu, Y. Zhu, A. Garg, S. Savarese, L. Fei-Fei, JC. Niebles, Continuous Relaxation of Symbolic Planner for One-Shot Imitation Learning, *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)* 2019.

W.B. Shen, D. Xu, Y. Zhu, L. Guibas, L. Fei-Fei, S. Savarese, Situational Fusion of Visual Representation for Visual Navigation, *International Conference on Computer Vision (ICCV)* 2019.

DA. Huang*, S. Nair*, D. Xu*, Y. Zhu, A. Garg, S. Savarese, L. Fei-Fei, JC. Niebles, Neural Task Graphs: Generalizing to Unseen Tasks from a Single Video Demonstration, *Conference on Computer Vision and Pattern Recognition (CVPR)* 2019.

W. Chen, D. Xu, Y. Zhu, R. Martin Martin, L. Fei-Fei, S. Savarese, DenseFusion: 6D Object Pose Estimation by Iterative Dense Fusion", *Conference on Computer Vision and Pattern Recognition (CVPR)* 2019.

D. Xu, S. Nair, Y. Zhu, A. Garg, J. Gao, L. Fei-Fei, S. Savarese, Neural Task Programming: Learning to Generalize across Hierarchical Tasks, *International Conference on Robotics and Automation (ICRA)* 2018.

D. Xu, D. Anguelov, A. Jain, PointFusion: Deep Sensor Fusion for 3D Bounding Box Estimation, *Conference on Computer Vision and Pattern Recognition (CVPR)* 2018.

S. Pirk, O. Diamanti, B. Thibert, D. Xu and L. Guibas, 2017, September. Shape-aware spatio-temporal descriptors for interaction classification. *IEEE International Conference on Image Processing* (ICIP), 2017.

D. Xu, Y. Zhu, CB. Choy, L. Fei-Fei, Scene Graph Generation by Iterative Message Passing, *Conference on Computer Vision and Pattern Recognition (CVPR)* 2017.

CB. Choy, D. Xu, J. Gwak, K. Chen, S. Savarese, 3D-R2N2: A Unified Approach for Single and Multi-view 3D Object Reconstructionl, *European Conference on Computer Vision (ECCV)* 2016.

Y. Li, X. Hu, D. Xu, Y. Yue, E. Grinspun and P.K. Allen, Multi-sensor surface analysis for robotic ironing. *International Conference on Robotics and Automation* (ICRA), 2016.

Y. Li, Y. Yue, D. Xu, E. Grinspun and P.K. Allen, Folding deformable objects using predictive simulation and trajectory optimization. *IEEE/RSJ International Conference on Intelligent Robots and Systems* (IROS), 2015.

Y. Li, D. Xu, Y. Yue, Y. Wang, S. Chang, E. Grinspun, P.K. Allen, Recognition, Regrasping, and Unfolding of Deformable Object using Predictive Thin Shell Model, *IEEE International Conference on Robotics and Automation (ICRA)* 2015.

D. Xu, H. Badino, D. Huber, Topometric Localization on a Road Network, *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)* 2014.

D. Xu, G.E. Loeb, J.A. Fishel, Tactile identification of objects using Bayesian exploration, *IEEE International Conference on Robotics and Automation (ICRA)* 2013.

Workshop and Preprints

A. Mandlekar, D. Xu, R. Martin Martin, Y. Zhu, L. Fei-Fei, and S. Savarese. Human-in-the-Loop Imitation Learning using Remote Teleoperation, *Arxiv Preprint*, 2020.

Journal Publications

Y. Li, Wang, Y., Y. Yue, D. Xu, Case, M., Chang, S.F., E. Grinspun and Allen, P.K., Model-Driven Feedforward Prediction for Manipulation of Deformable Objects. *IEEE Transactions on Automation Science and Engineering.*, 2018.

Academic Talks

- Compositional Reasoning in Robot Learning — March-April 2021
  - University of Texas - Austin
  - Microsoft Research (Redmond)
  - Microsoft Research (New York)
  - University of Pennsylvania
  - University of Michigan - Ann Arbor
  - Georgia Institute of Technology
  - Cornell University
  - Yale University
  - University of Wisconsin - Madison
  - The Chinese University of Hong Kong
  - Simon Fraser University
- Vision Seminar, MIT — Feb 2021
  - Compositional Reasoning for Robot Learning
- DeepMind — Jan 2021
  - Hierarchy and Modularity in Robot Learning
- Cognitive Learning for Vision and Robotics Lab, USC — Dec 2020
  - Learning to Reason About the Physical World
- Robotic AI & Learning Lab, UC Berkeley — Dec 2020
  - Learning to Reason About the Physical World
- NVIDIA Research — Dec 2020
  - Learning to Reason About the Physical World
- Cornell Robotics Seminar, Cornell University — Nov 2020
  - Hierarchy and Modularity in Visual Imitation
- Robot Perception and Learning Lab, University of Texas, Austin — Nov 2020
  - Towards Compositional Generalization in Robot Learning
- Machine Learning Team, Deepmind — July 2019
  - Compositional Priors for Visual Imitation

Honors and Awards

- Outstanding Undergraduate Researcher Award, 2015
  - Computing Research Association
- Theodore R. Bashkow Award (Excellence in independent research), 2014
  - Department of Computer Science, Columbia University

Teaching

- CS4644/7643: Deep Learning — Fall 2022
  Instructor — Georgia Institute of Technology
- CS231N: Convolutional Neural Networks for Visual Recognition — Spring 2021
  Instructor — Stanford University
- CS231N: Convolutional Neural Networks for Visual Recognition — Spring 2020
  Instructor — Stanford University
- CS231N: Convolutional Neural Networks for Visual Recognition — Spring 2019
  Teaching Assistant, Lecturer — Stanford University
- CS231N: Convolutional Neural Networks for Visual Recognition — Spring 2018
  Teaching Assistant, Lecturer — Stanford University
- CS231A: Computer Vision, From 3D Reconstruction to Recognition — Winter 2018
  Teaching Assistant — Stanford University
- COMS 4121: Computing Systems for Data Science — Spring 2015
  Teaching Assistant — Columbia University

Service

- Co-organizer: Workshop on Overlooked Aspects of Imitation Learning: Systems, Data, Tasks, and Beyond at RSS 2022
- Co-organizer: Tutorial on Deep Representation and Estimation of State for Robotics at IROS 2020
- Co-organizer Workshop on Advances and Challenges in Imitation Learning for Robotics at RSS 2020
- Area Chair: Conference on Robot Learning (2022)
- Conference Reviewing:
  - Computer Vision and Pattern Recognition (2018, 2019, 2020)
  - Conference on Robot Learning (2021)
  - European Conference of Computer Vision (2018, 2020)
  - IEEE International Conference on Robotics and Automation (2018, 2019, 2020, 2021, 2022)
  - IEEE/RSJ International Conference on Intelligent Robots and Systems (2022)
  - Neural Information Processing Systems (2021, 2022)
  - Robotics: Science and Systems (2021, 2022)
  - International Conference on Computer Vision (2019, 2021)
  - International Conference on Machine Learning (2021)
- Journal Reviewing:
  - Transactions on Pattern Analysis and Machine Intelligence (2018, 2019, 2020, 2021)
  - Transactions on Robotics (2020, 2021)
  - IEEE Robotics and Automation Letters (RA-L) (2018, 2019, 2022)