David Held

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Current appointment

Assistant Professor, Robotics Institute, Carnegie Mellon University 2017 - Present

Education/ Post-Doc

U.C. Berkeley 2016 - 2017
Post-doctoral researcher.
Advised by Pieter Abbeel.

Stanford University 2012 - 2016
Ph.D. in Computer Science.
Thesis: Deep Learning and Probabilistic Methods for Robotic Perception from Streaming Data
Advised by Sebastian Thrun and Silvio Savarese.

Stanford University 2010 - 2012
Masters of Science in Computer Science.
Thesis: Autonomous Driving: Car Detection, Tracking, and Street Sign Detection
Advised by Sebastian Thrun and Vaughan Pratt.

Massachusetts Institute of Technology 2006 - 2007
Masters of Science in Mechanical Engineering.

Massachusetts Institute of Technology 2001 - 2005
Bachelor of Science in Mechanical Engineering with a concentration in Controls Engineering.

Publications:

Journals

Wang, Y., **Held, D.**, Erickson, Z., Visual Haptic Reasoning: Estimating Contact Forces by Observing Deformable Object Interactions, Robotics and Automation Letters (RA-L) with presentation at the International Conference on Intelligent Robots and Systems (IROS), 2022 (In press)

Qi, C., Lin, X., **Held, D.,** Learning Closed-loop Dough Manipulation using a Differentiable Reset Module, *Robotics and Automation Letters (RA-L)* with presentation at the International Conference on Intelligent Robots and Systems (IROS), 2022 (In press)

Gu, Q., Okorn, B., **Held, D.**, OSSID: Online Self-Supervised Instance Detection by (and for) Pose Estimation, Robotics and Automation Letters (RA-L), 2022 with presentation at the International Conference of Robotics and Automation (ICRA), 2022

Weng, T., Pallankize, A., Tang, Y., Kroemer, O., **Held, D.** Multi-modal Transfer Learning for Grasping Transparent and Specular Objects. Robotics and Automation Letters (RA-L) with presentation at the International Conference of Robotics and Automation (ICRA), 2020

Hu, P., **Held, D.**, Ramanan, D. Learning to Optimally Segment Point Clouds. Robotics and Automation Letters (RA-L) with presentation at the International Conference of Robotics and Automation (ICRA), 2020

Held, D., Levinson, J., Thrun, S., Savarese, S. Robust Real-Time Tracking Combining 3D Shape, Color, and Motion. *International Journal of Robotics Research (IJRR), 2016.*

Levinson, J.; Askeland, J.; Becker, J.; Dolson, J.; **Held, D.**; Kammel, S.; Kolter, J.Z.; Langer, D.; Pink, O.; Pratt, V.; Sokolsky, M.; Stanek, G.; Stavens, D.; Teichman, A.; Werling, M.; Thrun, S. (2011) Towards Fully Autonomous Driving: Systems and Algorithms. Intelligent Vehicles Symposium (IV), IEEE, June 2011.

Jones, L.A. & **Held, D.** Characterization of Tactors Used in Vibrotactile Displays. Journal of Computing and Information Sciences in Engineering, 2008.

Conferences

Zhou, W., **Held, D.**, Learning to Grasp the Ungraspable with Emergent Extrinsic Dexterity, Conference on Robot Learning (CoRL), 2022 (In press) - **Oral Presentation** (Selection rate 6.5%)

Pan*, C., Okorn*, B., Zhang*, H., Eisner*, B., **Held, D.**, TAX-Pose: Task-Specific Cross-Pose Estimation for Robot Manipulation, Conference on Robot Learning (CoRL), 2022 (In press)

Seita, D., Wang†, Y., Shetty†, S., Li†, E., Erickson, Z., **Held, D.** ToolFlowNet: Robotic Manipulation with Tools via Predicting Tool Flow from Point Clouds, Conference on Robot Learning (CoRL), 2022 (In press)

Lin*, X., Qi*, H., Zhang, Y., Huang, Z., Fragkiadaki, K., Li, Y., Gan, C., **Held, D.**, Planning with Spatial-Temporal Abstraction from Point Clouds for Deformable Object Manipulation**,** Conference on Robot Learning (CoRL), 2022 (In press)

Okorn, B., Pan, C., Hebert, M., **Held, D.**, Deep Projective Rotation Estimation through Relative Supervision, Conference on Robot Learning (CoRL), 2022 (In press)

Khurana, T.*, Hu, P.*, Dave, A., Ziglar, J., **Held, D**., Ramanan, D., Differentiable Raycasting for Self-supervised Occupancy Forecasting, European Conference on Computer Vision (ECCV), 2022 (In press)

Tirumala, S.*, Weng, T.*, Seita, D.*, Kroemer, O., Temel, Z., **Held, D.**, Learning to Singulate Layers of Cloth based on Tactile Feedback, International Conference on Intelligent Robots and Systems (IROS), 2022 (In press)

Eisner, B.*, Zhang, H.*, **Held, D.**, FlowBot3D: Learning 3D Articulation Flow to Manipulate Articulated Objects, Robotics: Science and Systems (RSS), 2022 - **Best paper finalist**

Huang, Z., Lin, X., **Held, D.**, Mesh-based Dynamics with Occlusion Reasoning for Cloth Manipulation, Robotics: Science and Systems (RSS), 2022

Lin, X., Huang, Z, Li, Y., Tenenbaum, J., **Held, D.**, Gan, C., DiffSkill: Skill Abstraction from Differentiable Physics for Deformable Object Manipulations with Tools**,** International Conference on Learning Representations (ICLR), 2022

Narasimhan, G., Zhang, K., Eisner, B., Lin, X., **Held, D.**, Transparent Liquid Segmentation for Robotic Pouring, International Conference of Robotics and Automation (ICRA), 2022

Mittal, H., Okorn, B., Jangid, A., **Held, D.**, Self-Supervised Point Cloud Completion via Inpainting, British Machine Vision Conference (BMVC), 2021 - **Oral presentation** (Selection rate 3.3%)

Dasari S, Wang J, Hong J, Bahl S, Lin Y, Wang A, Thankaraj A, Chahal K, Calli B, Gupta S, **Held D.**, Pinto L, Pathak D, Kumar, V, Gupta, A. RB2: Robotic Manipulation Benchmarking with a Twist. NeurIPS 2021 Datasets and Benchmarks Track, 2021

Wang J, Gang H, Ancha S, Chen YT, **Held D.** Semi-supervised 3D Object Detection via Temporal Graph Neural Networks. International Conference on 3D Vision (3DV), 2021

Lin, X, Wang, Y., Huang, Z., **Held, D.,** Learning Visible Connectivity Dynamics for Cloth Smoothing, Conference on Robot Learning (CoRL), 2021

Weng, T., Bajracharya, S., Wang, Y., **Held, D.,** FabricFlowNet: Bimanual Cloth Manipulation with a Flow-based Policy, Conference on Robot Learning (CoRL), 2021

Sikchi, H., Zhou, W., **Held, D.**, Learning Off-policy for Online Planning, Conference on Robot Learning (CoRL), 2021 - **Oral presentation** (Selection rate 6.5%); **Best Paper Finalist**

Ancha, S., Pathak, G., Narasimhan, S., **Held, D.**, Active Safety Envelopes using Light Curtains with Probabilistic Guarantees, Robotics: Science and Systems (RSS), 2021

Okorn, B.*, Gu, Q.*, Hebert, M., **Held, D**., ZePHyR: Zero-shot Pose Hypothesis Rating, International Conference of Robotics and Automation (ICRA), 2021

Raaj, Y., Ancha, S., Tamburo, R., **Held, D.**, Narasimhan, S., Exploiting & Refining Depth Distributions with Triangulation Light Curtains, Conference on Computer Vision and Pattern Recognition (CVPR), 2021

Hu, P., Huang, A., Dolan, J., **Held, D.**, Ramanan, D., Safe Local Motion Planning with Self-Supervised Freespace Forecasting, Conference on Computer Vision and Pattern Recognition (CVPR), 2021

Lin, X., Wang, Y., Okin, J., **Held, D**., SoftGym: Benchmarking Deep Reinforcement Learning for Deformable Object Manipulation, Conference on Robot Learning (CoRL), 2020

Wang, Y., Narasimhan, G., Lin, X., Okorn, B., **Held, D**., Visual Self-Supervised Reinforcement Learning with Object Reasoning, Conference on Robot Learning (CoRL), 2020

Zhou, W., Bajracharya, S., **Held, D**.; PLAS: Latent Action Space for Offline Reinforcement Learning; Conference on Robot Learning (CoRL), 2020 - **Plenary talk** (Selection rate 4.1%)

Ancha, S., Raaj, Y., Hu, P., Narasimhan, S., **Held, D.**, Active 3D Perception using Light Curtains, European Conference on Computer Vision (ECCV), 2020 - **Spotlight** (Selection rate 5.3%)

Qian*, J., Weng*, T., Zhang, L., Okorn, B., **Held, D.**; Cloth Region Segmentation for Robust Grasp Selection; International Conference on Intelligent Robots and Systems (IROS), 2020

Wang, J., Ancha, S., Chen, Y., **Held, D.**, Self-supervised Learning for 3D Data Association; International Conference on Intelligent Robots and Systems (IROS), 2020

Okorn, B., Xu, M., Hebert, M., **Held, D.**, Learning Orientation Distributions for Object Pose Estimation, International Conference on Intelligent Robots and Systems (IROS), 2020

Weng, X., Wang, J., **Held, D**., Kitani, K., 3D Multi-Object Tracking: A Baseline and New Evaluation Metrics; International Conference on Intelligent Robots and Systems (IROS), 2020

Mittal, H., Okorn, B., **Held. D.,** Just Go with the Flow: Self-Supervised Scene Flow Estimation. Conference on Computer Vision and Pattern Recognition (CVPR), 2020 **- Oral** (Selection rate 5.7%)

Hu, P., Ziglar, J., **Held, D.**, Ramanan, D. What You See is What You Get: Exploiting Visibility for 3D Object Detection. Conference on Computer Vision and Pattern Recognition (CVPR), 2020 **- Oral** (Selection rate 5.7%)

Ancha, S., Lin, J., **Held, D.** Combining Deep Learning and Verification for Precise Object Instance Detection. Conference on Robot Learning (CoRL), 2019

Lin, X., Baweja, H., Kantor, G.**, Held, D.,** Adaptive Auxiliary Task Weighting for Reinforcement Learning. Neural Information Processing Systems (NeurIPS), 2019

Lin, X., Guo, P., Florensa, C., **Held, D.**, Adaptive Variance for Changing Sparse-Reward Environments, *International Conference of Robotics and Automation (ICRA), 2019*

Yuan, W., Khot, T., **Held, D.**, Mertz, C., Hebert, M., PCN: Point Completion Network, *International Conference on 3D Vision (3DV)*, 2018 **- Best Paper Honorable Mention**

Florensa, C., **Held, D.,** Geng, X., Abbeel, P., Automatic Goal Generation for Reinforcement Learning Agents, *International Conference on Machine Learning (ICML)*, 2018

Huang, S., **Held, D.,** Abbeel, P., Dragan, A. Enabling Robots to Communicate their Objectives, *Autonomous Robotics (AURO)*, 2018

Florensa, C., **Held, D.**, Wulfmeier, M. and Abbeel, P., Reverse Curriculum Generation for Reinforcement Learning, *Conference on Robot Learning (CoRL), 2017.*

Clavera, I., **Held, D.**, Abbeel, P., Policy Transfer via Modularity, *International Conference on Intelligent Robots and Systems (IROS), 2017.*

Achiam, J., **Held, D.**, Tamar, A. and Abbeel, P., Constrained Policy Optimization. *International Conference on Machine Learning (ICML), 2017.*

Huang, S. H., **Held, D.**, Abbeel, P., & Dragan, A. D. Enabling Robots to Communicate their Objectives. *Robotics: Science and Systems (RSS), 2017.*

Held, D., McCarthy, Z., Zhang, M., Shentu, F., Abbeel, P., Probabilistically Safe Policy Transfer. *International Conference of Robotics and Automation (ICRA), 2017.*

Held, D., Thrun, S., Savarese, S., Learning to Track at 100 FPS with Deep Regression Networks. *European Conference on Computer Vision (ECCV), 2016.*

Held, D., Guillory, D., Rebsamen, B., Thrun, S., Savarese, S., A Probabilistic Framework for Real-time 3D Segmentation using Spatial, Temporal, and Semantic Cues. *Robotics: Science and Systems (RSS), 2016.*

Held, D., Thrun, S., Savarese, S. Robust Single-View Instance Recognition. *International Conference of Robotics and Automation (ICRA), 2016.*

Held, D., Levinson, J., Thrun, S., Savarese, S. Combining 3D Shape, Color, and Motion for Robust Anytime Tracking. *Robotics: Science and Systems (RSS), 2014.*

Held, D., Levinson, J., Thrun, S. Precision Tracking with Sparse 3D and Dense Color 2D Data *International Conference of Robotics and Automation (ICRA), 2013.* **- Best Vision Paper Finalist**

Held, D., Levinson, J., Thrun, S. A Probabilistic Framework for Car Detection in Images using Context and Scale. *International Conference of Robotics and Automation (ICRA), 2012.*

Held, D., Yekutieli, Y., Flash, T. Characterizing Stiffness of Multi-Segment Flexible Arm Movements. *International Conference of Robotics and Automation (ICRA), 2012.*

Jones, L.A., **Held, D.** & Hunter, I. Surface Waves and Spatial Localization in Vibrotactile Displays. Proceedings of the IEEE Haptics Symposium, 2010.

Jin, Z., Waydo, S., Wildanger, E.B., Lammers, M., Scholze, H., Foley, P., **Held, D.**, Murray, R.M. MVWT-II: The Second Generation Caltech Multi-Vehicle Wireless Testbed. 2004 American Control Conference (ACC), 2004.

Research and Industry Experience

U.C. Berkeley Robot Learning Lab 2016 - 2017
Post-doctoral researcher. Developed deep reinforcement learning algorithms for object manipulation

Stanford Autonomous Driving Team 2010 - 2016
Ph.D. Student. Developed perception algorithms for self-driving car.

Google [x] Self-driving Car Team 2013
Intern. Developed perception algorithms for Google's self-driving car.

Weizmann Laboratory for Vision Research and Robotics 2009 - 2010
Research Assistant. Developed novel method to analyze stiffness of simulated octopus arm.

Evolven Software 2008-2009
Software developer. Developed enterprise software for configuration management.

MIT Bioinstrumentation Lab 2006 - 2007
Master's Thesis. Modeled the interaction of tactors with skin for a vibrotactile display.

Harvard Social Psychology Lab 2005
Research Assistant. Tested the contrast effect with images.

MIT Aerospace Controls Lab 2004
Research Assistant. Analyzed digital magnetometer signals for controlling a UAV.

Caltech Controls and Dynamical Systems 2003
Research Assistant. Designed an outdoor testbed of 12 miniature hovercrafts.

Patents

Robust Anytime Tracking Combining 3D Shape, Color, and Motion with Annealed Dynamic Histograms (Provisional Patent: 14/733,902)

Awards

Best Paper Finalist, RSS, 2022
Best Paper Finalist, CoRL 2021
NSF CAREER Award 2021
Best Paper Honorable Mention, 3DV 2018
Google Research Faculty Award 2017
Best Vision Paper Finalist, ICRA 2013
Best Master's Thesis of 2012 in Stanford's Computer Science Department

Invited Talks

IV (Intelligent Vehicles) Workshop: Beyond Supervised Learning: Addressing Data Scarcity in Intelligent Transportation Systems	2022
Georgia Tech	2022
USC CS Colloquium	2022
Stanford Vision and Learning Lab	2022
UW Robotics Colloqiuum	2022
UC Berkeley CITRIS People and Robots Seminar	2022
Michigan Robotics	2022
MIT Robotics Seminar	2021
Northeastern Robotics Seminar	2021
Cornell CS Colloquium	2021
ICCV Workshop on Benchmarking Multi-Target Tracking	2021
Brown Robotics Seminar	2021
RSS Workshop: Deformable Object Simulation in Robotics	2021
CVPR Workshop: 3D Deep Learning and Robotics	2021
Naver Labs Europe	2021
Technion Robotics Seminar	2021
ICPR Workshop: Perception and Modeling for Manipulation of Objects	2021
IPAM Workshop: Individual Vehicle Autonomy: Perception and Control	2020
Robot Learning Workshop, Lehigh University	2019
Aachen University, Aachen, Germany,	2019
CVPR Workshop: Bringing Robots to the Computer Vision Community	2019
Deep Learning Summit, Boston, MA,	2019
Brown University, Providence, RI,	2018
UT Austin	2018
Symposium on Machine Learning in Science and Engineering	2018
Carnegie Mellon University, RoboOrg Meta-Seminar	2017
Carnegie Mellon University, Robotics Institute Seminar	2017
Cornell University	2017
Carnegie Mellon University	2017
University of British Columbia	2017
Microsoft Research, Cambridge, UK	2017
Hebrew University (Israel)	2017
University of Michigan	2017
Tel Aviv University (Israel)	2017
Princeton University	2017
Massachusetts Institute of Technology	2017
University of California, Los Angeles	2017
University of Southern California	2017
Toyota Technology Institute of Chicago	2017
University of California, San Diego	2017
Northeastern University	2017
Columbia University	2017
Weizmann Institute (Israel)	2017
University of Cambridge	2017
Spotlight Talk at NeurIPS Workshop on Reliable Machine Learning in the Wild	2016
Future Star Talks Series at RSS Workshop on Deep Learning for Autonomous Robots	2016
Northeastern College of Computer and Information Science Seminar	2016
Harvard School of Engineering and Applied Sciences Special Seminar	2016
Johns Hopkins Laboratory for Computational Sensing and Robotics Seminar	2016
University of Maryland Computer Vision Laboratory Seminar	2016
TTI Chicago Young Researcher Seminar Series	2016
MIT Robotics Seminar	2015

UC Berkeley	2015
Carnegie Mellon University VASC Seminar Talk	2015
University of Toronto AI Seminar	2015
University of Michigan AI Seminar	2015
The Future of Driverless Car Technology, UCLA VC Fund	2015
Google [x] Self-driving Car Team	2015
Stanford-Seoul National University Workshop on Automated Driving	2015

Teaching

Graduate Introduction to Computer Vision (16-720A) - 2022
Statistical Techniques in Robotics (16-831) - 2018-2021
Special Seminar: Deep Reinforcement Learning for Robotics (16-881) - 2019-2021

Mentoring

Current Post-docs: Daniel Seita

Current PhD students: Thomas Weng
Wenxuan Zhou
Benjamin Eisner
Yufei Wang (co-advised with Zackory Erickson)
Jenny Wang

Current MS students: Harry Zhang
Sashank Tirumala
Mansi Agarwal
Fan yang
Sarthak Shetty
Carl Qi
Gunjan Sethi
Bowen Jiang
Zhanyi Sun
Pranay Gupta

Current undergraduates: Edward Li

Current Capstone Mentor:
Nitheesh Lakshminarayanappa

Past PhD students: Brian Okorn (co-advised with Martial Hebert)
Xingyu Lin
Siddarth Ancha (co-advised with Srinivasa Narasimhan)

Past MS students: Gaurav Pathak
Zixuan Huang
Chuer Pan
Harshit Sikchi
Qiao Gu
Sujay Bajracharya
Jianing (Aurora) Qian
Gautham Narayan Narasimhan
Yufei Wang
Junyu (Jenny) Nan
Mengyun (Olivia) Xu
Edward Ahn
Harjatin Baweja
Pengsheng Guo
Tiancheng Jin
Ignasi Clavera
Devin Guillory
Yi Gu

Past undergraduates: Nomaan Qureshi
Rahul Chakwate
Kai Zhang
Rashmi Anil
Khush Agrawal

Shubham Sahoo
Rohan Chacko
Patrick Liu
Jake Olkin
Yimin Tang
Zhaoyuan (Andy) Fang
Ziwen (Leo) Zhuang
Yujie Lu
Yifan Qiao
Michael Zhang
Fred Shentu
Xinyang Geng
Helen Jiang
Derin Dutz
Naor Brown
Jacquelyn Kunkel
Elizabeth Kim
Katherine Ray

Past Capstone Mentor:

Tanay Sharma
Xiaochen Han
Zhenli Zhang
Arpit Jangid
Ji Liu
Yujia Chen
Luxin Zhang
Anshuman Majumdar
Chang Gao
Ziyan Wang
Siddhant Jain
Ankita Kalra
Purna Sowmya Munukutla

Past Research Assistant:

Himangi Mittal
Jianren Wang
Wen-Hsuan Chu
Stephanie Milani
Tiancheng Jin

Past MRSD teams: Cubi: Jorge Anton, Nithin Subbiah Meganathan, Laavanye Bahl, Changsheng Shen, Paulo Camasmie

Beyond Sight: Chien Chih Ho, Pengsheng Guo, Rohit Murthy, Vivek Gopal Ramaswamy, and Oliver Krengel

Service

Associate Editor:

ICRA 2017-2023
CoRL 2022
RA-L 2020-2022
IROS 2018-2020
ICRA Workshops 2021
ICML 2019-2020
NeurIPS 2019-2020

Co-organizer:

ICRA 2022: 2nd Workshop on Representing and Manipulating Deformable Objects
RSS Workshop - Workshop on Visual Learning and Reasoning for Robotics, 2020-2021
NeurIPS Workshop - Deep Learning for Action and Interaction, 2016
ICRA Publications co-Chair (unofficial), 2016
Stanford AI Lab Distinguished Speaker Series 2014-2015
Bay Area Vision Meeting 2014

ONR Workshop on Structured Learning for Scene Understanding 2014

Reviewer:
RSS 2016-2018, 2020-2022
WAFR 2022
ICRA 2014-2016, 2018-2019, 2022
NeurIPS Workshop - Black in AI 2018-2022
Black in AI Innovation and Research Summer Research Grant, 2021
CoRL 2019-2021
ICRA Workshops 2021
RSS Pioneers 2018-2020
RA-L 2019-2020
Journal of Field Robotics, 2019
ICML Workshop - Multi-Task and Lifelong Reinforcement Learning, 2019
CVPR Workshop - Real-World Challenges and New Benchmarks for Deep Learning in Robotic Vision 2018
CoRL 2017-2018
CVPR VOCVALC - 2nd International workshop on Visual Odometry and Computer Vision Applications based Location Clues 2018
TPAMI 2017-2018
IROS 2013-2016
NeurIPS Workshop - Acting and Interacting in the Real World: Challenges in Robot Learning, 2017
NeurIPS Workshop - Hierarchical Reinforcement Learning, 2017
CVPR Workshop - Deep Learning for Robotic Vision 2015, 2017
IETE Journal of Research 2016
T-RO 2015
CVPR 2015
CVPR Workshop - Computer Vision in Vehicle Technology, 2015
ITS 2011-2014

Other:
Co-chair, IEEE RAS TC on Robot Learning
Co-chair, AI4All Summer Program, 2022
CMU Founder and Faculty Sponsor, AI Mentor-Matching Program, 2017-2022
NSF Panel Member - 2019-2021
Mentor, Tartan Scholars - 2021-2022
Founder and Faculty Sponsor, RI Manipulation Discussion Group - 2019-2022
Guest Speaker, AI4All Summer Program, 2018-2019, 2021

Funding:

One Shot Instance Segmentation, Google Research Award; $50,000 (granted on 2/21/2018, Gift Award)

Assured Autonomy; DARPA; $2,596,704.31; co-PI share: $560,502 (04/01/2018 – 01/31/2023)

Joint 2D/3D Object Detection and Tracking with Uncertainty Measures; Honda Research Institute; $135,859 (12/11/2018 – 12/01/2019)

S&AS: FND: Uncertainty Aware Safe Deep Reinforcement Learning; NSF IIS; $500,000 (04/01/2019 – 03/31/2023)

CMU Argo AI Center for Autonomous Vehicle Research; Argo AI, LLC; Total: $15 million; co-PI share: $1,406,933 allocated so far for subprojects: Joint 2D-3D Object Tracking ($513,646.00); Learning to Find Objects in Colorized Point Clouds ($216,730); Online Perception for Forecasting ($676,557) (06/01/2019 – 05/31/2024)

RI: Medium: Energy Efficient Adaptive Sensing for Semi-Autonomous Systems; NSF IIS; $1,199,962; co-PI share: $311,135.24 (10/01/2019 – 09/30/2022)

Perceptual Reinforcement Learning for Deformable Object Manipulation; LG Electronics; $921,373 (12/11/2019 - 12/31/2022)

Self-Supervised Learning for 2D/3D Object Tracking; Honda Research Institute; $142,381 (01/01/2020 - 12/31/2020)

Grasp Manifolds; Meta Platforms, Inc. (Facebook); $150,000 (03/01/2021 - 04/05/2022)

CAREER: Self-supervised Representation Learning for Deformable Object Manipulation; NSF IIS; $597,151 (03/15/2021 - 02/28/2026)

Grasp Manifolds - Phase II; Meta Platforms, Inc. (Facebook); $150,000 (04/01/2022 - 03/31/2023)

Generalizable Extrinsic Dexterity through Object-Centric Skill Abstraction"; Meta Platforms, Inc. (Facebook); $150,000 (05/16/2022 - 05/15/2023)

Training programs:

Mental Health First Aid Certification
Bias Busters
Floor Marshal Training
Active Shooter Training
Green Dot Overview Training
Social Host Training

Media Coverage:

VOA (Voice of America) Russian Broadcast, 2022
Element 14, “Robots are now figuring out how to pour water into a glass”, 2022
Institution of Mechanical Engineers, “Here's to the rise of the robot bartender”, 2022
AZO Robotics, “Robotic Manipulation of Deformable Objects”, 2022
TechTalks, “This deep learning technique solves one of the tough challenges of robotics”, 2022
COSMOS, “Solving the challenges of robot pizza making”
MIT News, “Solving the challenges of robotic pizza-making”, 2022
Tech Crunch, “Better learning through `complex dough-manipulation’”, 2022
Wall Street Journal, “How computers with humanlike senses will change our lives,” 2021
Italia Uno, 2021
Tech Crunch, “CMU develops a method to improve robotic grasping of transparent objects”, 2020
The Next Web, “This robot uses color cameras and AI to grab transparent objects”, 2020
“New deep learning algorithms could improve robot sight,” Tech Target, 2018