

David Held

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Current appointment	Assistant Professor, Robotics Institute, Carnegie Mellon University	2017 - Present
Education	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. 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	Florensa, C., Held, D. , Wulfmeier, M. and Abbeel, P., <u>Reverse Curriculum Generation for Reinforcement Learning</u> . <i>Conference on Robot Learning (CoRL)</i> , 2017.	
	Clavera, I., Held, D. , Abbeel, P., <u>Policy Transfer via Modularity</u> . <i>International Conference on Intelligent Robots and Systems (IROS)</i> , 2017.	
	Achiam, J., Held, D. , Tamar, A. and Abbeel, P., <u>Constrained Policy Optimization</u> . <i>International Conference on Machine Learning (ICML)</i> , 2017.	
	Huang, S. H., Held, D. , Abbeel, P., & Dragan, A. D. <u>Enabling Robots to Communicate their Objectives</u> . <i>Robotics: Science and Systems (RSS)</i> , 2017.	
	Held, D. , McCarthy, Z., Zhang, M., Shentu, F., Abbeel, P., <u>Probabilistically Safe Policy Transfer</u> . <i>International Conference of Robotics and Automation (ICRA)</i> , 2017.	
	Held, D. , Thrun, S., Savarese, S., <u>Learning to Track at 100 FPS with Deep Regression Networks</u> . <i>European Conference on Computer Vision (ECCV)</i> , 2016.	
	Held, D. , Guillory, D., Rebsamen, B., Thrun, S., Savarese, S., <u>A Probabilistic Framework for Real-time 3D Segmentation using Spatial, Temporal, and Semantic Cues</u> . <i>Robotics: Science and Systems (RSS)</i> , 2016.	
	Held, D. , Thrun, S., Savarese, S. <u>Robust Single-View Instance Recognition</u> . <i>International Conference of Robotics and Automation (ICRA)</i> , 2016.	
	Held, D. , Levinson, J., Thrun, S., Savarese, S. <u>Robust Real-Time Tracking Combining 3D Shape, Color, and Motion</u> . <i>International Journal of Robotics Research (IJRR)</i> , 2016.	
	Held, D. , Levinson, J., Thrun, S., Savarese, S. <u>Combining 3D Shape, Color, and Motion for Robust Anytime Tracking</u> . <i>Robotics: Science and Systems (RSS)</i> , 2014.	
	Held, D. , Levinson, J., Thrun, S. <u>Precision Tracking with Sparse 3D and Dense Color 2D Data</u> . <i>International Conference of Robotics and Automation (ICRA)</i> , 2013. Best Vision Paper Finalist	
	Held, D. , Levinson, J., Thrun, S. <u>A Probabilistic Framework for Car Detection in Images using Context and Scale</u> . <i>International Conference of Robotics and Automation (ICRA)</i> , 2012.	

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

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

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

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. Developing 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.	
Evolgen 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 Vision Paper Finalist, ICRA 2013

Best Master's Thesis of 2012 in Stanford's Computer Science Department
M.S. Thesis: "Autonomous Driving: Car Detection, Tracking, and Street Sign Detection," co-advised by Sebastian Thrun and Vaughan Pratt

Invited Talks

Spotlight Talk at NIPS 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

2017 Graduate Computer Vision (16-720-A), co-teaching
 2017 Statistical Techniques in Robotics (16-831), co-teaching

Mentoring

I served as a mentor for: Joshua Achiam, Sandy Huang, Ignasi Clavera, Michael Zhang, Fred Shentu, Xinyang Geng, Devin Guillory, Helen Jiang, Derin Dutz, Naor Brown, Jacquelyn Kunkel, Elizabeth Kim, Katherine Ray

Service

Associate Editor: International Conference on Robotics and Automation (ICRA), 2017-2018

Organizer: Deep Learning for Action and Interaction, NIPS Workshop 2016
 (unofficial) ICRA Publications co-Chair, 2016
 Stanford AI Lab Distinguished Speaker Series 2014-2015
 Bay Area Vision Meeting 2014
 ONR Workshop on Structured Learning for Scene Understanding 2014

Program Committee: Computer Vision in Vehicle Technology, CVPR 2015 Workshop
 Deep Learning for Robotic Perception, CVPR 2017 Workshop

Reviewer: RSS 2016-2017, IROS 2013-2016, ICRA 2014-2016, IETE Journal of Research 2016, T-RO 2015, CVPR 2015, CVPR Workshop 2015, 2017 (Deep Learning for Robotic Vision), ITS 2011-2014