Tucker Ryer Hermans

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Education

Georgia Institute of Technology, School of Interactive Computing Atlanta, GA
Ph.D. Robotics, 2014

- Thesis: "Representing and Learning Affordance-Based Behaviors"
- Thesis Committee: Aaron Bobick (**advisor**), James M. Rehg (**co-advisor**), Henrik Christensen, Charles C. Kemp, Mike Stilman, and Dieter Fox (University of Washington)

Georgia Institute of Technology, College of Computing Atlanta, GA
M.S. Computer Science: Computational Perception and Robotics, 2012

Bowdoin College Brunswick, ME
A.B. Magna Cum Laude in Computer Science (Honors) and German, 2009

Humboldt Universität zu Berlin Berlin, Germany
Coursework in Computer Science and German Literature, 2007–2008

Experience

Kahlert School of Computing, University of Utah July 2021–Present
Associate Professor

NVIDIA, Seattle, WA March 2020–Present
Senior Research Scientist

School of Computing, University of Utah July 2015–July 2021
Assistant Professor

NVIDIA, Seattle, WA May 2019–August 2019
Visiting Professor

Technische Universität Darmstadt, Department of Computer Science April 2014–July 2015
Postdoctoral Researcher in Robot Learning

Georgia Institute of Technology, School of Interactive Computing Aug 2009–April 2014
Graduate Research Assistant

Awards and Honors

National Academy of Sceiences Kavli Frontiers of Science Participant 2023
Sloan Research Fellow 2021
International Symposium on Medical Robotics (ISMR) Best Paper Award–Finalist 2021
RSS Workshop on Deformable Object Simulation in Robotics (DO-Sim) Best Paper Award 2021
RSS Workshop on Deformable Object Simulation in Robotics (DO-Sim) Best Paper Award–Honorable Mention 2021
IEEE Senior Member 2020
CoRL Best Systems Paper 2019

ICRA Best Paper in Robot Manipulation–Finalist	2019
NSF CAREER Award	2019
3M Non-Tenured Faculty Award	2019
ICRA Best Medical Robotics Paper	2017
ICDL-Epirob CIS Student Travel Grant	2013
Georgia Tech President's Fellowship	2009–2013
Phi Beta Kappa, Alpha of Maine	2009
Maine State Police Colonel's Award	2009
RoboCup Standard Platform League: Second Place	2009
RoboCup Standard Platform League: Third Place	2008
RoboCup Standard Platform League: World Champion	2007
Sarah and James Bowdoin Scholar	2006, 2007

Invited Talks

"Large Scale Simulation for Learning to Manipulate Deformable Objects" May 2022
2nd Workshop on Representing and Manipulating Deformable Objects @ ICRA2022. Joint talk with Isabella Huang.

"Improving Multi-fingered Robot Manipulation by Unifying Learning and Planning" May 2021
Robotics Seminar, Deep Mind

"Multi-Fingered Grasp Learning and Planning" April 2021
Invited Guest Lecture, University of Illinois Urbana-Champaign CS 498IR: AI for Robot Manipulation

"Improving Multi-fingered Robot Manipulation by Unifying Learning and Planning" November 2020
iCub Robotics Seminar, Italian Institute of Technology

"Can common sense guide autonomous robot learning and exploration?" July 2020
CogSci Workshop on the Origins of Commonsense

"Improving Multi-fingered Robot Manipulation by Unifying Learning and Planning" May 2020
Robotics Seminar, University of California; San Diego

"Improving Multi-fingered Robot Manipulation by Unifying Learning and Planning" January 2020
Robotics Seminar, University of Michigan

"Improving Multi-fingered Robot Manipulation by Unifying Learning and Planning" September 2019
Robotics Institute Seminar, Carnegie Mellon University

"Improving Multi-fingered Robot Manipulation by Unifying Learning and Planning" September 2019
Institute for Robotics and Intelligent Machines Seminar, Georgia Tech

"Improving Multi-fingered Robot Manipulation by Unifying Learning and Planning" December 2018
NVIDIA, Seattle, WA

"Planning Multi-fingered Grasps in Learned Neural Networks" April 2018
RSS 2018 Symposium, Cornell University

"Learning and Planning for Autonomous, Multi-fingered Robot Manipulation" October 2017
Robotics Colloquium, University of Washington

"Within-Hand Manipulation Benchmark" September 2017
IROS Workshop on Benchmarking Protocols for Robot Manipulation

"Visual and Tactile Learning for Robot Manipulation" January 2016
Department of Mechanical Engineering, Brigham Young University

"Visual and Tactile Learning for Robot Manipulation" April 2015
School of Computing, University of Utah

"Visual and Tactile Learning for Robot Manipulation" March 2015
School of Computer Science, McGill University

"Visual and Tactile Learning for Robot Manipulation" February 2015
Department of Computer Science, Drexel University

"Tactile Sensing for Object Manipulation in Clutter" September 2014
Third Workshop on Robotics in Clutter, IROS 2014

Publications

Bibliography Key

› Underlined names denote student advisees
› Daggered names † denote other student authors
› Starred names * denote equal contribution (i.e. joint first authors)
› Red paper titles are clickable hyperlinks to project pages or PDFs

Journal Articles

[J1] M. Matak and T. Hermans. "Planning Visual-Tactile Precision Grasps via Complementary Use of Vision and Touch". IEEE Robotics & Automation Letters (RA-L). 2023.

[J2] D. K. Dalton†, G. F. Tabor, T. Hermans, and J. J. Abbott. "Attracting Conductive Nonmagnetic Objects With Rotating Magnetic Dipole Fields". IEEE Robotics and Automation Letters. 2022.

[J3] I. Huang†, Y. Narang, C. Eppner, B. Sundaralingam, M. Macklin, R. Bajcsy, T. Hermans, and D. Fox. "DefGraspSim: Physics-based Simulation of Grasp Outcomes for 3D Deformable Objects". IEEE Robotics & Automation Letters (Special Issue on Robotic Handling of Deformable Objects). 2022.

[J4] H. J. Sulkar†, T. W. Knighton†, L. Amoafo†, K. Aliaj†, C. W. Kolz, Y. Zhang, T. Hermans, and H. B. Henninger. "In Vitro Simulation of Shoulder Motion Driven by 3D Scapular and Humeral Kinematics". Journal of Biomechanical Engineering. 2022.

[J5] K. Jensen-Nau†, T. Hermans, and K. K. Leang. "Near-Optimal Area-Coverage Path Planning of Energy Constrained Aerial Robots with Application in Autonomous Environmental Monitoring". IEEE Transactions on Automation Science and Engineering. 2021.

[J6] R. S. Novin, A. Yazdani, A. Merryweather, and T. Hermans. "A Model Predictive Approach for Online Mobile Manipulation of Nonholonomic Objects using Learned Dynamics". International Journal of Robotics Research. 2021.

[J7] L. N. Pham†, G. F. Tabor, A. Pourkand, J. L. B. Aman, T. Hermans, and J. J. Abbott. "Dexterous magnetic manipulation of conductive non-magnetic objects". Nature. 2021.

[J8] B. Sundaralingam and T. Hermans. "In-Hand Object-Dynamics Inference using Tactile Fingertips". IEEE Transactions on Robotics. 2021.

[J9] K. Aliaj†, G. Feeney†, B. Sundaralingam, T. Hermans, K. B. Foremen, K. N. Bachus, and H. B. Henninger. "Replicating Dynamic Humerus Motion using an Industrial Robot". PLOS ONE. 2020.

[J10] S. Cruciani*†, B. Sundaralingam*, K. Hang†, V. Kumar, T. Hermans, and D. Kragic. "Benchmarking In-Hand Manipulation". IEEE Robotics and Automation Letters (Special Issue: Benchmarking Protocols for Robotic Manipulation). 2020.

[J11] Q. Lu, M. V. der Merwe, B. Sundaralingam, and T. Hermans. "Multi-Fingered Grasp Planning via Inference in Deep Neural Networks". IEEE Robotics & Automation Magazine (Special Issue on Deep Learning and Machine Learning in Robotics). 2020.

[J12] R. S. Novin, E. Taylor, T. Hermans, and A. Merryweather. "Development of a Novel Computational Model for Evaluating Fall Risk in Patient Room Design". Health Environments Research & Design Journal (HERD). 2020.

[J13] J. D. Carrico†, T. Hermans, K. J. Kim, and K. K. Leang. "3D-Printing and Machine Learning Control of Soft Ionic Polymer-Metal Composite Actuators". Scientific Reports (Special Collection: Soft Sensors and Actuators). 2019.

[J14] Q. Lu and T. Hermans. "Modeling Grasp Type Improves Learning-Based Grasp Planning". IEEE Robotics and Automation Letters (Presented at ICRA 2019). 2019.

[J15] B. Sundaralingam and T. Hermans. "Relaxed-Rigidity Constraints: Kinematic Trajectory Optimization and Collision Avoidance for In-Grasp Manipulation". Autonomous Robots. 2019.

[J16] J. R. Watson and T. Hermans. "Assembly Planning by Subassembly Decomposition Using Blocking Reduction". IEEE Robotics and Automation Letters. 2019.

[J17] F. Veiga†, J. Peters, and T. Hermans. "Grip Stabilization of Novel Objects using Slip Prediction". IEEE Transactions on Haptics. 2018.

Peer-Reviewed Conference and Workshop Papers

[C1] I. Huang†, Y. Narang, R. Bajcsy, F. Ramos, T. Hermans, and D. Fox. "DefGraspNets: Grasp Planning on 3D Fields with Graph Neural Nets". IEEE International Conference on Robotics and Automation (ICRA). 2023.

[C2] Y. Huang, A. Conkey, and T. Hermans. "Planning for Multi-Object Manipulation with Graph Neural Network Relational Classifiers". IEEE International Conference on Robotics and Automation (ICRA). 2023.

[C3] W. Liu†, T. Hermans, S. Chernova, and C. Paxton. "StructDiffusion: Object-Centric Diffusion for Semantic Rearrangement of Novel Objects". CoRL Workshop on Language and Robot Learning. 2022.

[C4] W. Liu†, C. Paxton, T. Hermans, and D. Fox. "StructFormer: Learning Spatial Structure for Language-Guided Semantic Rearrangement of Novel Objects". IEEE International Conference on Robotics and Automation (ICRA). 2022.

[C5] P. Sharma†, B. Sundaralingam, V. Blukis, C. Paxton, T. Hermans, A. Torralba, J. Andreas, and D. Fox. "Correcting Robot Plans with Natural Language Feedback". Robotics: Science and Systems (RSS). 2022.

[C6] G. F. Tabor, L. N. Pham†, J. J. Abbott, and T. Hermans. "Adaptive Manipulation of Conductive, Nonmagnetic Objects via a Continuous Model of Magnetically Induced Force and Torque". Robotics: Science and Systems (RSS). 2022.

[C7] B. Thach, B. Y. Cho†, A. Kuntz, and T. Hermans. "Learning Visual Shape Control of Novel 3D Deformable Objects from Partial-View Point Clouds". IEEE International Conference on Robotics and Automation (ICRA). 2022.

[C8] A. Yazdani, R. Sabbagh Novin†, A. Merryweather, and T. Hermans. "DULA and DEBA: Differentiable Ergonomic Risk Models for Postural Assessment and Optimization in Ergonomically Intelligent pHRI". IEEE International Conference on Intelligent Robots and Systems (IROS). 2022.

[C9] S. Chaeibakhsh†, R. S. Novin, T. Hermans, A. Merryweather, and A. Kuntz. "Optimizing Hospital Room Layout to Reduce the Risk of Patient Falls". International Conference on Operations Research and Enterprise Systems (ICORES). 2021.

[C10] B. Y. Cho†, T. Hermans, and A. Kuntz. "Planning Sensing Sequences for Subsurface 3D Tumor Mapping". International Symposium on Medical Robotics (ISMR). 2021.

[C11] Y. Huang, M. Bentley†, T. Hermans, and A. Kuntz. "Toward Learning Context-Dependent Tasks from Demonstration for Tendon-Driven Surgical Robots". International Symposium on Medical Robotics (ISMR). 2021**. Best Paper Award–Finalist; Best Student Paper Award–Finalist**.

[C12] T. Lai†, W. Zhi†, T. Hermans, and F. Ramos. "Parallelised Diffeomorphic Sampling-based Motion Planning". Conference on Robot Learning (CoRL). 2021.

[C13] R. S. Novin, A. Yazdani, A. Merryweather, and T. Hermans. "Risk-Aware Decision Making for Service Robots to Minimize Risk of Patient Falls in Hospitals". IEEE International Conference on Robotics & Automation (ICRA). 2021.

[C14] C. Paxton, C. Xie†, T. Hermans, and D. Fox. "Predicting Stable Configurations for Semantic Placement of Novel Objects". Conference on Robot Learning (CoRL). 2021.

[C15] A. Yazdani, R. S. Novin, A. Merryweather, and T. Hermans. "DULA: A Differentiable Ergonomics Model for Postural Optimization in pHRI". RSS Workshop on Robotics for People: Perspectives on Interaction, Learning and Safety (R4P). 2021.

[C16] A. Yazdani, R. S. Novin, A. Merryweather, and T. Hermans. "Ergonomically Intelligent Physical Human-Robot Interaction: Postural Estimation, Assessment, and Optimization". AAAI Artificial Intelligence for Human-Robot Interaction Symposium (AI-HRI). 2021.

[C17] A. Yazdani, R. S. Novin, A. Merryweather, and T. Hermans. "Is The Leader Robot an Adequate Sensor for Posture Estimation and Ergonomic Assessment of A Human Teleoperator?" IEEE International Conference on Automation Science and Engineering (CASE). 2021.

[C18] M. N. Goodell†, T. E. Truong†, S. R. Marston†, B. J. Smiley†, E. R. Befus†, A. Bingham†, K. Allen†, J. R. Bourne†, Y. Wei, K. E. Magargal, V. Ganesan, D. L. Mendoza, A. C. Seth, S. A. Harwood, M. Bodson, T. Hermans, and K. K. Leang. "Autonomous Light Assessment Drone for Dark Skies Studies". ASME Dynamic Systems and Control Conference. 2020.

[C19] V. C. V. Kumar†, T. Hermans, D. Fox, S. Birchfield, and J. Tremblay. "Contextual Reinforcement Learning of Visuo-tactile Multi-fingered Grasping Policies". NeurIPs Workshop on Robot Learning. 2020.

[C20] Q. Lu, M. V. der Merwe, and T. Hermans. "Multi-Fingered Active Grasp Learning". IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS). 2020.

[C21] M. V. der Merwe, Q. Lu, B. Sundaralingam, M. Matak, and T. Hermans. "Learning Continuous 3D Reconstructions for Geometrically Aware Grasping". IEEE International Conference on Robotics and Automation (ICRA). 2020.

[C22] A. Conkey and T. Hermans. "Active Learning of Probabilistic Movement Primitives". IEEE-RAS International Conference on Humanoid Robotics (Humanoids). 2019.

[C23] A. Conkey and T. Hermans. "Learning Task Constraints from Demonstration for Hybrid Force/Position Control". IEEE-RAS International Conference on Humanoid Robotics (Humanoids). 2019.

[C24] S. Payne†, C. F. G. IV†, S. E. Markhan†, T. Hermans, and K. K. Leang. "Assembly Planning using a Multi-arm System for Polygonal Furniture". ASME Dynamic Systems and Control Conference (DSCC). 2019.

[C25] B. Sundaralingam, A. Lambert†, A. Handa, B. Boots, T. Hermans, S. Birchfield, N. Ratliff, and D. Fox. "Robust Learning of Tactile Force Estimation through Robot Interaction". IEEE International Conference on Robotics and Automation (ICRA). 2019**. Best Paper in Robot Manipulation Award–Finalist**.

[C26] M. Wilson and T. Hermans. "Learning to Manipulate Object Collections Using Grounded State Representations". Conference on Robot Learning (CoRL). 2019**. Best Systems Paper Award**.

[C27] R. Sabbagh Novin, A. Yazdani, T. Hermans, and A. Merryweather. "Dynamics Model Learning and Manipulation Planning for Objects in Hospitals using a Patient Assistant Mobile (PAM) Robot". IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS). 2018.

[C28] B. Sundaralingam and T. Hermans. "Geometric In-Hand Regrasp Planning: Alternating Optimization of Finger Gaits and In-Grasp Manipulation". IEEE International Conference on Robotics and Automation (ICRA). 2018.

[C29] Q. Lu, K. Chenna, B. Sundaralingam, and T. Hermans. "Planning Multi-Fingered Grasps as Probabilistic Inference in a Learned Deep Network". International Symposium on Robotics Research (ISRR). 2017.

[C30] K. M. Popek†, T. Hermans, and J. J. Abbott. "First Demonstration of Simultaneous Localization and Propulsion of a Magnetic Capsule in a Lumen using a Single Rotating Magnet". IEEE International Conference on Robotics and Automation (ICRA). 2017**. Best Medical Robotics Paper Award**.

[C31] B. Sundaralingam and T. Hermans. "Relaxed-Rigidity Constraints: In-Grasp Manipulation using Purely Kinematic Trajectory Optimization". Robotics: Science and Systems (RSS). 2017.

[C32] Z. Yi†, R. Calandra†, F. Veiga†, H. van Hoof†, T. Hermans, Y. Zhang, and J. Peters. "Active Tactile Object Exploration with Gaussian Processes". IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS). 2016.

[C33] J. Hoelscher, J. Peters, and T. Hermans. "Evaluation of Tactile Feature Extraction for Interactive Object Recognition". IEEE-RAS International Conference on Humanoid Robotics (Humanoids). 2015.

[C34] H. van Hoof†, T. Hermans, G. Neumann, and J. Peters. "Learning Robot In-Hand Manipulation with Tactile Features". IEEE-RAS International Conference on Humanoid Robotics (Humanoids). 2015.

[C35] F. Veiga†, H. van Hoof, J. Peters, and T. Hermans. "Stabilizing Novel Objects by Learning to Predict Tactile Slip". IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS). 2015.

[C36] A. Ciptadi, T. Hermans, and J. M. Rehg. "An In Depth View of Saliency". British Machine Vision Conference (BMVC). 2013.

[C37] T. Hermans, F. Li, J. M. Rehg, and A. F. Bobick. "Learning Contact Locations for Pushing and Orienting Unknown Objects". IEEE-RAS International Conference on Humanoid Robotics (Humanoids). 2013.

[C38] T. Hermans, F. Li, J. M. Rehg, and A. F. Bobick. "Learning Stable Pushing Locations". IEEE International Conference on Developmental Learning and Epigenetic Robotics (ICDL-EPIROB). 2013.

[C39] T. Hermans, J. M. Rehg, and A. F. Bobick. "Decoupling Behavior, Perception, and Control for Autonomous Learning of Affordances". IEEE International Conference on Robotics and Automation (ICRA). 2013.

[C40] T. Hermans, J. M. Rehg, and A. F. Bobick. "Decoupling Behavior, Control, and Perception in Affordance-Based Manipulation". IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) Workshop on Cognitive Assistive Systems. 2012.

[C41] T. Hermans, J. M. Rehg, and A. F. Bobick. "Guided Pushing for Object Singulation". IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS). 2012.

[C42] A. Cosgun, T. Hermans, V. Emeli, and M. Stilman. "Push Planning for Object Placement on Cluttered Table Surfaces". IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS). 2011.

[C43] T. Hermans, J. M. Rehg, and A. F. Bobick. "Affordance Prediction via Learned Object Attributes". ICRA Workshop on Semantic Perception, Mapping, and Exploration. 2011.

[C44] H. Zhou, T. Hermans, A. V. Karandikar, and J. M. Rehg. "Movie Genre Classification via Scene Categorization". ACM Multimedia. 2010.

[C45] H. Work, E. Chown, T. Hermans, and J. Butterfield. "Robust Team-Play in Highly Uncertain Environments". International Joint Conference on Autonomous Agents and Multiagent Systems (AAMAS). 2008.

[C46] H. Work, E. Chown, T. Hermans, J. Butterfield, and M. McGranaghan. "Player Positioning in the Four-Legged League". RoboCup 2008: Robot Soccer World Cup XII. 2008.

Conference & Workshop Abstracts

[A1] I. Huang†, Y. Narang, C. Eppner, B. Sundaralingam, M. Macklin, T. Hermans, and D. Fox. "DefGraspSim: Simulation-based grasping of 3D deformable objects". RSS Workshop on Deformable Object Simulation in Robotics (DO-Sim). 2021**. Best Paper Award**.

[A2] B. Thach, A. Kuntz, and T. Hermans. "DeformerNet: A Deep Learning Approach to 3D Deformable Object Manipulation". RSS Workshop on Deformable Object Simulation in Robotics (DO-Sim). 2021**. Best Paper Award–Honorable Mention**.

[A3] H. J. Sulkar†, C. W. Kolz, K. Aliaj†, T. W. Knighton†, T. Hermans, and H. B.Henninger. "In Vitro Simulation of Physiologic Human Shoulder Motion". Congress of the International Society of Biomechanics / American Society of Biomechanics (ISB/ASB). 2019.

[A4] T. Hermans, F. Veiga†, J. Hoelscher†, H. van Hoof†, and J. Peters. "Demonstration: Learning for Tactile Manipulation". Advances in Neural Information Processing Systems (NeurIPS), Demonstration Track. 2014.

Technical Reports

[T1] T. Hermans, J. Strom, G. Slavov, J. Morrison, A. Lawrence, E. Krob, and E. Chown. "Northern Bites 2009 Team Report". Tech. rep. 2009.

[T2] E. Chown, J. Fishman, J. Strom, G. Slavov, T. Hermans, N. Dunn, A. Lawrence, J. Morrison, and E. Krob. "Northern Bites 2008 Standard Platform Robot Team". Tech. rep. 2008.

Papers Under Review

[U1] Y. Huang, N. C. Taylor, A. Conkey, W. Liu, and T. Hermans. "Learning Object-Environment Relations for Latent Space Planning from Partial Observations". Robotics: Science and Systems. 2023**. (Under Review)**.

[U2] W. Liu, Y. Du†, T. Hermans, S. Chernova, and C. Paxton. "StructDiffusion: Language-Guided Creation of Physically-Valid Structures using Unseen Objects". Robotics: Science and Systems. 2023**. (Under Review)**.

[U3] J. Pavlasek†, S. Lewis†, B. Sundaralingam, F. Ramos, and T. Hermans. "Ready, Set, Plan! Planning to Goal Sets using Generalized Bayesian Inference". Robotics: Science and Systems. 2023**. (Under Review)**.

[U4] A. Conkey and T. Hermans. "Planning under Uncertainty to Goal Distributions". IEEE Transaction on Robotics (TRO). 2022**. (Under Review)**.

[U5] A. Yazdani, R. Sabbagh Novin, A. Merryweather, and T. Hermans. "Occlusion-Robust Multi-Sensory Posture Estimation in Physical Human-Robot Interaction". ACM Transactions on Human-Robot Interaction Special Issue on AI-HRI. 2022**. (Under Review)**.

Funding

Awarded (Current)

[G1] Alfred P. Sloan Foundation Research Fellowship
- Role: PI (sole investigator)
- Total Award: $75,000
- Awarded: 02/16/2021

[G2] NSF: CAREER: Improving Multi-fingered Manipulation by Unifying Learning and Planning
- Role: PI (sole investigator)
- Total Award: $532,664
- Duration: 03/15/2019–03/14/2024
- Additional REU Support: $32,000

[G3] 3M Non-tenured Faculty Award (Unrestricted Gift)
- Role: PI (sole investigator)
- Total Award: $45,000
- Awarded: 06/01/2019

[G4] NSF: Collaborative Proposal: NRI: FND: Graph Neural Networks for Multi-Object Perception and Manipulation
- Role: PI (Collaborative PI Dieter Fox; University of Washington)
- Total Award: $749,318
- My Portion: $344,281
- Duration: 10/01/2020–09/30/2023

[G5] DARPA: MCS: OPICS: Obvious Plans and Inferences for Common Sense via Infant Behavior Learning
- Role: Co-PI (PI: Alan Fern, Oregon State University)
- Total Award: $8,990,450
- My Portion: $1,089,205
- Duration: 07/15/2019–07/14/2023

[G6] NSF: FRR: Dexterous Magnetic Manipulation of Conductive Nonmagnetic Objects with Electromagnetic Dipole-field Sources
- Role: Co-PI (PI Jake Abbott)
- Total Award: $554,285
- My Portion: $261,013
- Duration: 05/16/2022–05/15/2025

Awarded (Expired)

[E1] NSF: CRII: RI: Enabling Manipulation of Object Collections via Self-Supervised Robot Learning
- Role: PI (sole investigator)
- Total Award: $175,000
- Duration: 03/01/2017–02/28/2019
- Additional REU Support: $8000

[E2] NSF: EAGER: Toward Magnetic Manipulation of Nonmagnetic Objects
- Role: Co-PI (PI: Jake Abbott; Mechanical Engineering)
- Total Award: $248,739
- My Portion: $109,866
- Duration: 09/01/2018–08/31/2020

[E3] NIH: R01: Biomechanics of Reverse Total Shoulder Arthroplasty
- Role: Co-I; Added after grant was awarded (PI: Heath Henninger; Orthopaedics)
- Total Award: $2,003,321
- My Portion: $35,000
- Duration: 05/01/2016–04/30/2021

Students

Advising

- Mohanraj Devendran Shantihi — Ph.D. Computing: Robotics; Expected Spring 2024
- Iain Lee — Ph.D. Computing: AI; Expected Spring 2024
- Yixuan Huang — Ph.D. Computing: Robotics; Expected Spring 2025
- Siyeon Kim — Ph.D. Computing: Robotics; Expected Spring 2027
- Martin Matak — Ph.D. Computer Science; Expected Spring 2024
- Griffin Tabor — Ph.D. Computing: Robotics; Expected Summer 2023
- Bao Thach — Ph.D. Computing: Robotics; Expected Spring 2025
  (co-advisor Prof. A. Kuntz)
- Nichols Taylor — B.S. Computer Engineering and Mathematics; Expected Spring 2024
  (UROP Scholar; NSF REU)
- Herbert Wright — B.S. Computer Science; Expected Spring 2024
  (UROP Scholar)

Graduated

- Adam Conkey — Ph.D. Computing: Robotics; Summer 2022
- Qingkai Lu — Ph.D. Computing: Robotics; Spring 2020
- Balakumar Sundaralingam — Ph.D. Computing: Robotics; Spring 2020

- Roya Sabbagh Novin — Ph.D. Mechanical Engineering: Robotics; Spring 2021
  (co-advisor Prof. A. Merryweather)
- Mojtaba Amir Yazdani — Ph.D. Mechanical Engineering: Robotics; Summer 2022
  (co-advisor Prof. A. Merryweather)
- Mohanraj Devendran Shantihi — M.S. Computer Science; Project, Spring 2019
- Philip Erickson — M.S. Computer Science; Project, Fall 2016
- Kanrun Huang — M.S. Computing: Robotics; Project, Fall 2018
- Jiani Lin — M.S. Computer Science; Project, Spring 2017
- Rebecca E. Miles — M.S. Computing: Robotics; Project; Spring 2021
- Rebeka Mukherjee — M.S. Computing: Robotics; Project, Spring 2019
- Sharath Patlolla — M.S. Computer Science; Project; Fall 2020
- Jackson Ponstler — M.S. Computing: Robotics; Project, Fall 2016
- Dustin Webb — M.S. Computing: Robotics; Project, Fall 2018
- A.J. Bull — B.S. Computer Science; Honor's Thesis; Spring 2020
  (UROP Scholar; NSF REU)
- Emma Pinegar — B.S. Computer Science; Non-Thesis, Fall 2021
  (CRA Outstanding Undergraduate Researcher Honorable Mention; UROP Scholar, NSF REU)
- Mark Van der Merwe — B.S. Computer Science; Honor's Thesis; Spring 2020
  (NSF GRFP; CRA Outstanding Undergraduate Researcher Honorable Mention; UROP Scholar; NSF REU)
- Matthew Wilson — B.S. Computer Engineering; Honor's Thesis, Spring 2019
  (UROP Scholar; NSF REU)
- Hunter Brown — B.S./M.S. Mechanical Engineering; Thesis, Spring 2018
- Kautilya Chenna — M.S. Mechanical Engineering; Non-Thesis, Summer 2018
- Brian Fitting — M.S. Mechanical Engineering: Robotics; Non-Thesis, Spring 2019
- Tyler Jones — M.S. Mechanical Engineering; Non-Thesis, Fall 2016
- James Watson — M.S. Mechanical Engineering; Thesis, Summer 2018
- Hassan Zia — M.S. Mechanical Engineering; Non-thesis, Spring 2018
- Janine Hölscher — B.S. Informatik, TU Darmstadt; Thesis, Fall 2014

Former High School Student Interns

- Erin Floresca — Junior, AMES Academy; Spring-Summer 2018
- Shriya Pingali — Junior, West High School; Summer 2017

Teaching

- COMP 1020 "Programming for All 2" — Fall 2022
- CS 5320/6320 "Computer Vision" — Spring 2020, Spring 2021, Spring 2023
- CS 6958 "Robot Learning" — Fall 2020
- CS 4300 "Artificial Intelligence" — Spring 2019
- CS 6370 "Motion Planning" — Fall 2015–2019
- CS 7939 "Seminar in Robotics" — Fall 2015–2017
- CS 6300 "Artificial Intelligence" — Spring 2016, 2018
- CS 7930 "School of Computing Colloquium" — Spring 2016, Fall 2016, Spring 2017
- CS 7930 "Intro to Computing PhD" — Fall 2017–2019
- "Robot Learning Reading Group" — 2015–Present

Academic Service: External

IEEE/RAS TC on Robotic Hands, Grasping and Manipulation 2021–present
Technical Committee Co-Chair

IEEE International Conference on Robotics and Automation (ICRA) 2022
Session Chair

RSS Pioneers Workshop 2022, 2023
Meta-Reviewer

Robotics: Science and Systems (RSS) 2021
Workshop Chair

Robotics: Science and Systems (RSS) 2020
Publication Chair

Conference on Robot Learning (CoRL) 2020
Awards Committee Member

Conference on Robot Learning (CoRL) 2018,2020,2021
Area Chair

Conference on Robot Learning (CoRL) 2020
Session Chair

IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) 2020
Session Chair

Robotics: Science and Systems (RSS) 2019
Inclusion Chair

IEEE-RAS International Conference on Humanoid Robotics (Humanoids) 2019
Session Chair

Conference on Robot Learning (CoRL) 2017,2019
Program Committee Member

Robotics: Science and Systems (RSS) 2018
Area Chair

IEEE Robotics & Automation Letters (RA-L) August 2018–August 2021
Associate Editor

International Journal of Robotics Research (IJRR) 2017–2018
Guest Editor; Special Issue on RSS 2017

Robotics: Science and Systems (RSS) 2017
Presentation Chair

IEEE International Conference on Robotics and Automation (ICRA) 2017–2019
Associate Editor

IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) 2016, 2017
Associate Editor

National Science Foundation 2017, 2018, 2019
Panel Reviewer

U.S. Army Medical Research and Materiel Command, Congressionally Directed Medical Research Programs (CDMRP) 2016
Panel Reviewer

Workshop on "Visual and Tactile Learning for Interaction" at Robotics: Science and Systems July 2015
Lead Organizer

Faculty Hiring Committee, School of Interactive Computing, Georgia Tech 2012–2013
Student Committee Member

Reviewer:
International Journal of Robotics Research, IEEE Transactions on Robotics, Autonomous Robots, IEEE Robotics and Automation Letters, IEEE Transactions on Haptics, IEEE Transactions on Cognitive and Developmental Systems, RSS, IROS, ICRA, Humanoids, International Symposium on Robotics Research (ISRR), Journal of Intelligent and Robotic Systems, NeurIPS 2014 Workshop: Autonomously Learning Robots, Human Robot Interaction: Workshops and Tutorials, AAMAS Robotics Track (2017), ECCV Workshop on Affordances (2014), RSS Workshop on Affordances (2014), IROS Workshop on Cognitive Robotics and Systems (2013), RSS Workshop on Robots in Clutter (2013), ICRA Workshop on Interactive Perception (2013), RoboCup Symposium (2010, 2011)

Academic Service: Outreach and Media

Interview for: "Why did the Utah Inland Port give this California company a no-bid $2M contract?" June 3, 2022
Salt Lake Tribune

Interviewed for: "An intro to artificial intelligence for the average human" Jan 30, 2019
KSL.com

Panelist: "The Changing Nature of Work, Robots and Mindfulness" Jan 7, 2019
Radioactive, KRCL

Outreach Demonstration: "How to Program a Robot" April 2016, 2017, 2018, 2019
Project Youth: University of Utah

Outreach Lecture: "AlphaGo: In Context and In Depth" April 10, 2018
Science Movie Night: Natural History Museum of Utah

Outreach Lecture: "Robotics: Computing Interacting with the World" April 2017
Red, White, and U Day: University of Utah

Outreach Demonstration: "Robot Learning for Manipulation" November 2016, 2017
Engineering Day: University of Utah

Academic Service: Internal

Academic Senate Executive Committee, University of Utah July 2022–present
Member

Academic Senate, University of Utah July 2022–present
Senator

University Studies Committee, University of Utah May 2022–present
Committee Member

Informal RPT Review Committee, School of Computing, University of Utah Fall 2022
Committee Member

Robotics Track, School of Computing, University of Utah August 2022–present
Track Director

Diversity Committee, School of Computing, University of Utah Fall 2019–Fall 2021, Fall 2022–present
Committee Chair

Diversity Committee, School of Computing, University of Utah 2016–present
Committee Member

NCWIT Learning Circles Committee, School of Computing, University of Utah 2020
Committee Chair

Premajor Mentoring Program 2020
Mentor

PhD Fellowship Mentoring Program 2019,2020
Mentor

School of Computing, University of Utah 2018
Organized Undergraduate Panel on Internships

School of Computing, University of Utah 2017
Proposed Department Standardization for Responsible Conduct in Research Training

Graduate Visit Weekend, School of Computing, University of Utah 2017
Poster Session Organizer

School of Computing, University of Utah Fall 2016, 2017
Graduate Bootcamp Instructor

School of Computing, University of Utah 2016–2017
Colloquium Chair

Distinguished Lecture Series 2020–2021
Committee Member

Faculty Hiring Committee: AI, School of Computing, University of Utah 2019–2020, 2020–2021
Committee Member

Faculty Hiring Committee: CS Gemstone, School of Computing, University of Utah 2016–2017, 2017–2018
Committee Member

Faculty Hiring Committee: Computer Vision, School of Computing, University of Utah 2015–2016
Committee Member

Graduate Admissions Committee, School of Computing, University of Utah 2016, 2017
Committee Member