

Prof. Siddhartha Srinivasa

The Personal Robotics Lab
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Employment

Professor	2022-
Boeing Endowed Professor in Computer Science & Engineering	2017-22
Computer Science & Engineering Department, The University of Washington at Seattle	
Member, Board of Directors, Zordi Inc.	2021-
Director, Robotics AI, Amazon Inc.	2018-
First Wave Founder, Berkshire Grey Inc.	2014-18
Finmeccanica Associate Professor in Computer Science	2013-17
Associate Professor, The Robotics Institute, Carnegie Mellon University	2011-13
Senior Research Scientist, Intel Labs Pittsburgh	2005-11

Education

Ph.D., Carnegie Mellon University (CMU)	August 2005
Advisors: Michael Erdmann & Matthew Mason	<i>Thesis: Control Synthesis for Dynamic Contact Manipulation</i>
B. Tech., Indian Institute of Technology Madras (IITM)	August 1999
Advisor: A. Radhakrishnan	<i>Thesis: Reverse Engineering using the Structured Lighting Technique</i>

Honors and Awards

- ACM/HRI Best Paper Award Winner for Technical Advances in HRI [72], 2019
- ICAPS Best Student Paper Award Winner [78], 2019
- IEEE Fellow, 2018
- ICAPS Best Paper Award Winner [89], 2018
- ACM/IEEE HRI Best Paper Award Finalist [87], 2018
- Boeing Endowed Professorship in Computer Science, 2017-∞
- CMU Women's Association outstanding graduating senior advisor (Rachel Holladay), 2017
- IEEE ICRA Best Vision Paper Award Finalist [116], 2016
- RSS Best Systems Paper Award Finalist [136], 2015
- IEEE ICRA Best Conference Paper Award Finalist [130], 2015
- IEEE ICRA Best Video Award Finalist [140], 2014
- Finmeccanica Chair in Computer Science, 2013-16
- RSS Early Career Spotlight Award, 2013
- RSS Best Paper Award Finalist [154], 2013
- IEEE ICRA Best Manipulation Paper Award Finalist [155], 2013
- Robotics Institute Cool Person of the Year Award, 2012
- Okawa Foundation Research Grant, 2012
- Office of Naval Research Young Investigator Award, 2012

- IEEE RO-MAN Best Paper Award Finalist [162], 2012
- RSS Best Paper Award Finalist [161], 2012
- RAS Most Active Technical Committee Award: Mobile Manipulation, 2011
- ACM/IEEE HRI Best Paper Award Winner [182], 2010
- IEEE IROS Best Paper Award Finalist [180], 2010
- IEEE ICRA Best Manipulation Paper Award Finalist [178], 2010
- IEEE ICRA Best Vision Paper Award Finalist [190], 2009
- Intel Corporate Technology Group Divisional Recognition Awards, May, July, Oct 2008
- Intel Research Pittsburgh Lab Research Awards, January, July 2006, January 2007
- Indian National Mathematics Olympiad, 1994

Mentoring

Current Ph.D. Students

Sidharth Talia	2022-
Helen Wang (+Dieter Fox)	2022-
Bernie Zhou	2022-
Amal Nanvati (+Maya Cakmak)	2019-
Matthew Schmittle	2018-
Ethan Gordon	2018-
<i>Adaptive Robot-Assisted Feeding: An Online Learning Framework for Acquiring Previously-Unseen Food Items</i>	
William Agnew	2017-
<i>Human Priors for Reinforcement Learning</i>	
Liyiming Ke	2017-

Current Postdoctoral Fellows

Taylor Kessler Faulkner	2022-
Christoforos Mavrogiannis	2019-
Next: Assistant Professor @ Michigan	

Alumni - Postdoctoral Fellows

Tapomayukh Bhattacharjee	2017-2021
	Assistant Professor @ Cornell
Sanjiban Choudhury	2018-2019
	Assistant Professor @ Cornell
Matthew Barnes	2018-2019
	Researcher @ Google
Oren Salzman	2016-2019
	Assistant Professor @ Technion
Daqing Yi	2016-2018
	Researcher @ Google
Henny Admoni	2015-2017
	Assistant Professor @ CMU
Aaron Johnson	2015-2016
	Assistant Professor @ CMU

Alumni - Ph.D.

Sherdil Niyaz	2017-2022
<i>Optimizing the Design of Robot Environments via Interleaved Optimization and White-Box Motion-Planning</i>	Researcher @ Motionial
Brian Hou	2016-2022

<i>Robot Motion Planning with Uncertainty and Urgency</i>	Researcher @ Aurora
Samuel Ainsworth <i>Perspectives on Policy Learning</i>	2016-2022 Researcher @ Cruise
Patrick Lancaster (+Josh Smith) <i>Towards Dexterous In-Hand Manipulation via Electrostatic Braking and Pre-touch Sensing</i>	2014-2022 Postdoc @ Meta
Aditya Vamsikrishna <i>Efficient Robot Motion Planning in Cluttered Environments</i>	2016-2021 Researcher @ Aurora
Gilwoo Lee <i>Scalable Bayesian Reinforcement Learning</i>	2015-2020 Founder @ Zordi
Stefanos Nikolaidis <i>Mathematical Models of Adaptation in Human-Robot Collaboration</i>	2014-2018 Assistant Professor @ USC
Laura Herlant <i>Algorithms and Implementation and Studies on Eating with a Shared Control Robot Arm</i> Scientist @ iRobot	2013-2018 Senior Robotics Research
Zita Marinho (+Geoff Gordon) <i>Moment-based Algorithms for Structured Prediction</i>	2012-2018 Researcher @ Sacoor Brothers
Shervin Javdani (+Drew Bagnell) <i>Acting under Uncertainty for Information Gathering and Shared Autonomy</i>	2011-2017 Robotics Engineer @ Aurora
Matt Klingensmith (+Michael Kaess) <i>Tracking and Calibrating Robot Arms using SLAM Techniques</i>	2013-2016 Robotician @ Boston Dynamics
Jennifer King <i>Robust Rearrangement Planning using Nonprehensile Interaction</i>	2012-2016 Researcher @ Berkshire Grey
Michael Koval (+Nancy Pollard) <i>Robust Manipulation via Contact Sensing</i>	2012-2016 Software Engineer @ Waymo
Christopher Dellin <i>Completing Manipulation Tasks Efficiently in Complex Environments</i>	2009-2016 Robotician @ Nuro
Anca Dragan <i>Legible Robot Motion Planning</i>	2009-2015 Associate Professor @ Berkeley
Mehmet Dogar <i>A Framework for Manipulation in Cluttered Environments</i>	2008-2013 Associate Professor @ Leeds
Alvaro Collet (+Martial Hebert) <i>Lifelong Robotic Object Perception</i>	2009-2012 Engineering Lead @ Facebook
Dmitry Berenson (+James Kuffner) <i>Constrained Manipulation Planning</i>	2006-2011 Associate Professor @ Michigan

Alumni - M.S.

Jeongseok Lee <i>A Linear-Time Variational Integrator for Multibody Systems</i>	2016-2018 Researcher @ Meta
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Pengju Jin <i>Highly Robust Pose Estimation from Single Frame RGBD</i>	2017-2017 Researcher @ Aurora
Shushman Choudhury <i>Anytime Geometric Motion Planning on Large Dense Roadmaps</i>	2015-2017 Ph.D. @ Stanford
Rosario Scalise (+Stephanie Rosenthal) <i>Human-Centered Design of Robot Explanations</i>	2015-2017 Ph.D. @ UW
Shen Li (+Stephanie Rosenthal) <i>Automatically Evaluating and Generating Clear Robot Explanations</i>	2015-2017 Ph.D. @ MIT
Evan Shapiro <i>A Hierarchical Framework for Configuration Space Task Planning</i>	2013-2015 CEO @ Mina Foundation
Aaron Walsman <i>ROCK: Robust Object Constellation for Kinematic Pose</i>	2013-2015 Ph.D. @ UW
Elizabeth Cha (+Jodi Forlizzi) <i>Robots in the Home: Qualitative and Quantitative Insights into Kitchen Organization</i>	2012-2014 Researcher @ Waymo
Kyle Strabala <i>Learning the Communication of Intent Prior to Physical Collaboration</i>	2010-2012 Scientist @ Near Earth Autonomy
Garratt Gallagher (+Drew Bagnell) <i>GATMO: A Generalized Approach to Tracking Movable Objects</i>	2007-2009 Google Robotics
Martin Herrmann (+Dr.-Inf. Uwe Hanebeck @ Universitat Karlsruhe) <i>Active scene and object reconstruction for robotic manipulation from vision and laser</i>	2009-2009 TU Braunschweig

Alumni - Other

Ajinkya Kamat, Staff Research: <i>Outdoor Unstructured Mobile Manipulation</i>	2018-2019 MRSD @ CMU
Youngsun Kim, Staff Research: <i>Robot-Assisted Feeding</i>	2017-2019 Engineer @ Zordi
Hanjun Song, Staff Research: <i>Sensing Shear Forces During Food Manipulation</i>	2016-2019 Ph.D. @ MIT
Rachel Holladay, B.S. Thesis: <i>Following Paths in Task Space: Distance Metrics and Planning Algorithms</i>	2013-2017 Ph.D. @ MIT
Pyry Matikainen, Teaching Fellow Research: <i>Visual Computing</i>	2015-2017
Prasanna Velagapudi, Research Scientist Research: <i>Multi-Step Mobile Manipulation</i>	2012-2014 VP Engineering @ Berkshire Grey

Graduate Interns

Rishabh Madan (IIT Kharagpur)	2020
Sara Sheikholeslami (UBC)	2019
Lerrel Pinto (CMU)	2019

Daniel Gallenberger (TU Munich)	2018
Stefania Pellegrinelli (ITIA-CNR)	2015
Marco Cagnetti (University of Rome)	2015
Joshua Haustein (Universitat Karlsruhe)	2014
Henny Admoni (Yale)	2013
Georg Bartels (TU Bremen)	2013
Katie Correll (CMU)	2013
Michael Koval (CMU)	2012
Steven Gray (Penn)	2011
Vincenzo Micelli (University of Parma)	2011
Tim Niemueller (RWTH Aachen)	2010
Peter Kaiser (Universitat Karlsruhe)	2010
Maya Cakmak (Georgia Tech)	2010
Alex Sorokin (UIUC)	2010
Lillian Chang (CMU)	2009
Ross Knepper (CMU)	2009
Laura Lindzey (CMU)	2009
Manel Martinez (CMU)	2009
Julius Ziegler (Universitat Karlsruhe)	2009
Nico Blodow (TU Munich)	2009
Rosen Diankov (CMU)	2009
Geoffrey Hollinger (CMU)	2008
Kevin Peterson (CMU)	2008
Nathan Ratliff (CMU)	2008
Martin Rufli (ETH Zurich)	2008
Michael Ashley-Rollman (CMU)	2006
Stuart Anderson (CMU)	2006
Michael DeRosa (CMU)	2006
Ashish Deshpande (Michigan)	2006
Jiaxin Fu (CMU)	2006
Preethi Bhatt (CMU)	2006

Undergraduate Interns

Sumegh Roychowdhury (IIT Kharagpur)	2020
Sidharth Talia (Bharati Vidyapeeth College of Engineering)	2020
Rajat Kumar Jenamani (IIT Kharagpur)	2019
Jeffrey Maxwell (UW)	2019
Shivam Singhal (UW)	2019
Savanna Yee (UW)	2018
Nanda Sundaresan (UW)	2018
Kaiden James Field (UW)	2018
Connor Geiman (UW)	2018
Tao Jin (UW)	2018
Rahul Vernwal (IIT Kharagpur)	2018
Maha Alrashed (BU)	2018
Abdullah Albakry (NC State)	2018
Ramon Qu (UW)	2017
Nanda Sundaresan (UW)	2017
Jeffrey Maxwell (UW)	2017
Vinitha Ranganeni (CMU)	2015-2017
Kevin Zhang (CMU)	2015-2017
Pengju Jin (CMU)	2014-2017
Rachel Holladay (CMU)	2013-2017
Joey Fernau (CMU)	2015
Angela Wang (CMU)	2014
Peter McHale (CMU)	2014

Vikram Sunder (CMU)	2014
Don Zheng (CMU)	2014
Neil Jassal (CMU)	2014
Myles Blodnick (CMU)	2014
Scott Martin (CMU)	2014
Yuyang Guo (CMU)	2013-2014
Andrey Kurenkov (Georgia Tech)	2013
Abhijeet Tallavajhula (IIT)	2012
Bo Xiong (Connecticut)	2012
Corina Guarau (Jacobs)	2012
Debidatta Dwebi (IIT)	2012
Kenton Lee (Penn)	2012
Dominic Zirbel (CMU)	2012
Alex Zirbel (CMU)	2011-2012
Tom Mullins (CMU)	2011
Nick Stanley (CMU)	2011
Tudor Achim (CMU)	2009-2010
Andrew Yeager (CMU)	2009
Ian-Clanton Thuon (CMU)	2008-2009
Daniel Dewey (CMU)	2007-2008

Ph.D Thesis Committees

Senka Krivic (University of Innsbruck)	2019
Arunkumar Byravan (UW)	2019
Justin Huang (UW)	2018
Connor Schenk (UW)	2017-18
Kiril Solovey (Technion)	2018
Sanjiban Choudhury (CMU)	2013-17
Venkatraman Narayanan (CMU)	2013-17
Breelyn Kane Styler (CMU)	2011-18
Mike Phillips (CMU)	2011-15
Alberto Rodriguez (CMU)	2007-13
Ross Knepper (CMU)	2006-11
Nathan Ratliff (CMU)	2004-09

Publications ([Google Scholar](#))

Refereed Journals

- [1] N. Funk, C. Schaff, R. Madan, T. Yoneda, J. U. De Jesus, J. Watson, E. K. Gordon, F. Widmaier, S. Bauer, S. S. Srinivasa, T. Bhattacharjee, M. R. Walter, and J. Peters. Benchmarking structured policies and policy optimization for real-world dexterous object manipulation. *IEEE Robotics and Automation Letters*, 7(1):478–485, 2022.
- [2] C. Kessens, M. Kaplan, T. Rocks, P.R. Osteen, J. Rogers, E. Stump, A. Hurwitz, J. Fink, L. Quang, M. Gonzalez, J. Patel, M. DiBlasi, S. Patel, M. Weiker, D. Patel, J. Bowkett, R. Detry, S. Karumanchi, L. Matthies, J. Burdick, Y. Oza, A. Agarwal, A. Dornbush, D. Saxena, M. Likhachev, K. Schmeckpeper, K. Daniilidis, A. Kamat, S. Choudhury, A. Mandalika, and S.S. Srinivasa. Human-scale mobile manipulation using RoMan. *Journal of Field Robotics*, 2:1232–1262, 2022.
- [3] J. Spencer, S. Choudhury, M. Barnes, M. Schmittle, M. Chiang, P. Ramadge, and S.S. Srinivasa. Expert intervention learning: An online framework for robot learning from explicit and implicit human feedback. *Autonomous Robots*, 46:99–113, 2022.
- [4] M. Bhardwaj, S. Choudhury, B. Boots, and S. Srinivasa. Leveraging Experience in Lazy Search. *Autonomous Robots*, 45(7):979–996, 2021.

- [5] J.G. Gammell, T. Barfoot, and S.S. Srinivasa. Batch Informed Trees (BIT*): Informed asymptotically optimal anytime search. *The International Journal of Robotics Research*, 2020.
- [6] B. Yang, P.E. Lancaster, S.S. Srinivasa, and J.R. Smith. Benchmarking robot manipulation with the rubik’s cube. *IEEE Robotics and Automation Letters*, 2020.
- [7] T. Bhattacharjee, G. Lee, H. Song, and S.S. Srinivasa. Towards robotic feeding: Role of haptics in fork-based food manipulation. *IEEE Robotics and Automation Letters*, 2019.
- [8] M. Chen, S. Nikolaidis, H. Soh, D. Hsu, and S.S. Srinivasa. Trust-aware decision making for human-robot collaboration: Model learning and planning. *ACM Transactions on Human-Robot Interaction*, 2019.
- [9] R. Holladay, O. Salzman, and S.S. Srinivasa. Minimizing task-space fréchet error via efficient incremental graph search. *IEEE Robotics and Automation Letters*, 2019.
- [10] Jeongseok Lee, Michael X. Grey, Sehoon Ha, Tobias Kunz, Sumit Jain, Yuting Ye, Siddhartha S. Srinivasa, Mike Stilman, and C. Karen Liu. DART: Dynamic animation and robotics toolkit. *The Journal of Open Source Software*, 3(22):500, feb 2018.
- [11] J.G. Gammell, T. Barfoot, and S.S. Srinivasa. Informed sampling for asymptotically optimal path planning. *IEEE Transactions on Robotics*, 34(4):966–984, 2018.
- [12] S. Javdani, H. Admoni, S. Pellegrinelli, S.S. Srinivasa, and J.A. Bagnell. Shared autonomy via hindsight optimization for teleoperation and teaming. *The International Journal of Robotics Research*, 37(7):717–742, 2018.
- [13] S. Nikolaidis, M. Kwon, J. Forlizzi, and S.S. Srinivasa. Planning with verbal communication for human-robot collaboration. *ACM Transactions on Human-Robot Interaction*, 7(3), 2018.
- [14] B. Calli, A. Singh, J. Bruce, W. W. Aaron, K. Konolige, S.S. Srinivasa, P. Abbeel, and A.M. Dollar. YCB benchmarking project: Object set, data set and their applications. *Journal of The Society of Instrument and Control Engineers*, 56(10):792–797, 2017.
- [15] I. Dryanovski, M.K. Klingensmith, S.S. Srinivasa, and J. Xiao. Large-scale, real-time 3D scene reconstruction on a mobile device. *Autonomous Robots*, 41(6):1423–1445, 2017.
- [16] M. Ghorbel, J. Pineau, R. Gourdeau, S. Javdani, and S.S. Srinivasa. A decision-theoretic approach for the collaborative control of a smart wheelchair. *International Journal of Social Robotics*, pages 1–15, 2017.
- [17] S. Nikolaidis, D. Hsu, and S.S. Srinivasa. Human-robot mutual adaptation in collaborative tasks: Models and experiments. *The International Journal of Robotics Research*, 36(5-7):618–634, 2017.
- [18] A. Johnson, J. King, and S.S. Srinivasa. Convergent planning. *IEEE Robotics and Automation Letters*, 2016.
- [19] M. Klingensmith, S.S. Srinivasa, and M. Kaess. Articulated robot manipulator simultaneous localization and mapping (ARM-SLAM). *IEEE Robotics and Automation Letters*, 2016.
- [20] M.C. Koval, N.S. Pollard, and S.S. Srinivasa. Pre- and post-contact policy decomposition for planar contact manipulation under uncertainty. *The International Journal of Robotics Research*, 35(1–3):244–264, 2016.
- [21] B. Calli, A. Walsman, A. Singh, S.S. Srinivasa, P. Abbeel, and A.M. Dollar. Benchmarking in manipulation research: Using the Yale-CMU-Berkeley object and model set. *IEEE Robotics and Automation Magazine*, 22(3):36–52, 2015.
- [22] A. Collet, B. Xiong, C. Gurau, M. Hebert, and S.S. Srinivasa. HerbDisc: Towards lifelong robotic object discovery. *The International Journal of Robotics Research*, 34(1):3—25, 2015.
- [23] A.D. Dragan, R. Holladay, and S.S. Srinivasa. Deceptive robot motion: synthesis, analysis and experiments. *Autonomous Robots*, 39(3):331–345, 2015.
- [24] M.C. Koval, N.S. Pollard, and S.S. Srinivasa. Pose estimation for planar contact manipulation with manifold particle filters. *The International Journal of Robotics Research*, 34(7):922–945, 2015.

- [25] A. Stentz, H. Herman, A. Kelly, E. Meyhofer, G.C. Haynes, D. Stager, B. Zajac, J.A. Bagnell, J. Brindza, C. Dellin, M. George, J. Gonzalez-Mora, S. Hyde, M. Jones, M. Laverne, M. Likhachev, L. Lister, M.D. Powers, O. Ramos, J. Ray, D.P. Rice, J. Scheifflee, R. Sidki, S.S. Srinivasa, K. Strabala, J.P. Tardif, J. Valois, J.M. Vandeweghe, M.D. Wagner, and C. Wellington. CHIMP, the CMU highly intelligent mobile platform. *Journal of Field Robotics*, 32(2):209–228, 2015.
- [26] A.D. Dragan and S.S. Srinivasa. Integrating human observer inferences into robot motion planning. *Autonomous Robots*, 37(4):351–368, 2014.
- [27] R. Paolini, A. Rodriguez, S.S. Srinivasa, and M.T. Mason. A data-driven statistical framework for post-grasp manipulation. *The International Journal of Robotics Research*, 33(4):600—615, 2014.
- [28] M.R. Dogar, M.C. Koval, A. Tallavajhula, and S.S. Srinivasa. Object search by manipulation. *Autonomous Robots*, 36(1–2):153–167, 2013.
- [29] M.R. Dogar and S.S. Srinivasa. Physics-based manipulation in human environments. *Journal of the Robotics Society of Japan*, 31(4):353–357, 2013.
- [30] A.D. Dragan, K.T. Lee, and S.S. Srinivasa. Teleoperation with intelligent and customizable interfaces. *Journal of Human-Robot Interaction*, 1(3), 2013.
- [31] A.D. Dragan and S.S. Srinivasa. A policy-blending formalism for shared control. *The International Journal of Robotics Research*, 32(7):790–805, 2013. (Conference version was **Best Conference Paper Award Finalist, RSS 2012**).
- [32] K. Strabala, M.K. Lee, A.D. Dragan, J. Forlizzi, S.S. Srinivasa, M. Cakmak, and V. Micelli. Towards seamless human-robot handovers. *Journal of Human-Robot Interaction*, 2(1), 2013.
- [33] M. Zucker, R. Ratliff, A.D. Dragan, M. Pivtoraiko, M. Klingensmith, C. Dellin, J.A. Bagnell, and S.S. Srinivasa. CHOMP: Covariant Hamiltonian Optimization for Motion Planning. *The International Journal of Robotics Research*, 32(9–10):1164–1193, 2013.
- [34] M.R. Dogar and S.S. Srinivasa. A planning framework for non-prehensile manipulation under clutter and uncertainty. *Autonomous Robots*, 33(3):217–236, 2012. (Conference version was **Best Conference Paper Award Finalist, IEEE IROS 2010**).
- [35] R.A. Knepper, S.S. Srinivasa, and M.T. Mason. Toward a deeper understanding of motion alternatives via an equivalence relation on local paths. *The International Journal of Robotics Research*, 31(2):168–187, 2012.
- [36] M.T. Mason, A. Rodriguez, S.S. Srinivasa, and A.S. Vazquez. Autonomous manipulation with a general-purpose simple hand. *The International Journal of Robotics Research*, 31(5):688–703, 2012.
- [37] S.S. Srinivasa, D. Berenson, M. Cakmak, A. Collet, M.R. Dogar, A.D. Dragan, R.A. Knepper, T. Niemueller, K. Strabala, M. Vandeweghe, and J. Ziegler. HERB 2.0: Lessons learned from developing a mobile manipulator for the home. *Proceedings of the IEEE*, 100(8):1–19, 2012.
- [38] D. Berenson, S.S. Srinivasa, and J. Kuffner. Task Space Regions: A framework for pose-constrained manipulation planning. *The International Journal of Robotics Research*, 30(12):1435–1460, 2011.
- [39] A. Collet, M. Martinez, and S.S. Srinivasa. The MOPED framework: Object recognition and pose estimation for manipulation. *The International Journal of Robotics Research*, 30(10):1284–1306, 2011. (Conference version was **Best Vision Paper Award Finalist, IEEE ICRA 2009**).
- [40] S.S. Srinivasa, D. Ferguson, C.J. Helfrich, D. Berenson, A. Collet, R. Diankov, G. Gallagher, G. Hollinger, J. Kuffner, and M.V. Weghe. HERB: A Home Exploring Robotic Butler. *Autonomous Robots*, 28(1):5–20, 2010.
- [41] P. Yang, R.A. Freeman, G.J. Gordon, K.M. Lynch, S.S. Srinivasa, and R. Sukthankar. Decentralized estimation and control of graph connectivity for mobile sensor networks. *Automatica*, 46(2):390–396, 2010.
- [42] S.S. Siddhartha, R. Narasimha, A.J. Basu, and S.V. Kailas. Coherent structures in numerically simulated jets with and without off-source heating. *Fluid Dynamics Research*, 26(2):105–117, 2000.

Refereed Conferences

- [43] S. Belkhale, E.K. Gordon, Y. Chen, S. S. Srinivasa, T. Bhattacharjee, and D. Sadigh. Balancing efficiency and comfort in robot-assisted bite transfer. In *IEEE International Conference on Robotics and Automation*, 2022.
- [44] B. Hou and S. S. Srinivasa. Dynamic replanning with posterior sampling. In *IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2022.
- [45] A. Lambert, B. Hou, R. Scalise, S. S. Srinivasa, and B. Boots. Stein variational probabilistic roadmaps. In *IEEE International Conference on Robotics and Automation*, 2022.
- [46] P. Lancaster, P. Gyawali, C. Mavrogiannis, S. S. Srinivasa, and J. R. Smith. Optical proximity sensing for pose estimation during in-hand manipulation. In *IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2022.
- [47] C. Mavrogiannis, J. DeCastro, and S. S. Srinivasa. Implicit multiagent coordination at uncontrolled intersections via topological braids. In *Workshop on the Algorithmic Foundations of Robotics*, 2022.
- [48] C. Mavrogiannis, J. A. DeCastro, and S. S. Srinivasa. Analyzing multiagent interactions in traffic scenes via topological braids. In *IEEE International Conference on Robotics and Automation*, 2022.
- [49] A Nanavati*, N. Walker*, L. Taber, C. Mavrogiannis, L. Takayama, M. Cakmak, and S. S. Srinivasa. Not all who wander are lost: A localization-free system for in-the-wild mobile robot deployments. In *ACM/IEEE International Conference on Human-Robot Interaction*, 2022.
- [50] S. Ainsworth, K. Lowrey, J. Thickstun, Z. Harchaoui, and S.S. Srinivasa. Faster Policy Learning with Continuous-Time Gradients. In *Learning for Dynamics and Control*, 2021.
- [51] E.K. Gordon, S. Roychowdhury, T. Bhattacharjee, K. Jamieson, and S.S. Srinivasa. Leveraging Post Hoc Context for Faster Learning in Bandit Settings with Applications in Robot-Assisted Feeding. In *IEEE International Conference on Robotics and Automation*, 2021.
- [52] L. Ke, J. Wang, T. Bhattacharjee, B. Boots, and S.S. Srinivasa. Grasping with Chopsticks: Combating Covariate Shift in Model-free Imitation Learning for Fine Manipulation. In *IEEE International Conference on Robotics and Automation*, 2021.
- [53] G. Lee, B. Hou, S. Choudhury, and S.S. Srinivasa. Bayesian Residual Policy Optimization: Scalable Bayesian Reinforcement Learning with Clairvoyant Experts. In *IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2021.
- [54] A. Nanavati, C. Mavrogiannis, K. Weatherwax, L. Takayama, M. Cakmak, and S.S. Srinivasa. Modeling Human Helpfulness with Individual and Contextual Factors for Robot Planning. In *Robotics: Science and Systems*, 2021.
- [55] N. Walker, C. Mavrogiannis, S. S. Srinivasa, and M. Cakmak. Influencing behavioral attributions to robot motion during task execution. In *Conference on Robot Learning*, 2021.
- [56] C. Kessens, J. Fink, A. Hurwitz, M. Kaplan, P.R. Osteen, T. Rocks, J. Rogers, E. Stump, L. Quang, M. DiBlasi, M. Gonzalez, D. Patel, J. Patel, S. Patel, M. Weiker, J. Bowkett, R. Detry, S. Karumanchi, J. Burdick, L. Matthies, Y. Oza, A. Agarwal, A. Dornbush, M. Likhachev, K. Schmeckpeper, K. Daniilidis, A. Kamat, S. Choudhury, A. Mandalika, and S.S. Srinivasa. Toward fieldable human-scale mobile manipulation using RoMan. In *Proceedings of SPIE Artificial Intelligence and Machine Learning for Multi-Domain Operations Applications II*, volume 11413, April 2020.
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Reports and Theses

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Seminars

Keynote @ International Conference on Automated Planning and Scheduling	2022
Carnegie Mellon University	2022
MIT	2020
Army Research Laboratories	2019
Carnegie Mellon University	2019
Northwestern	2018
Toyota Technological Institute at Chicago	2018
Georgia Tech	2018
Amazon	2018
Microsoft Research	2017
Carnegie Mellon	2017
Princeton	2017
University of Washington	2017
Harvard	2016
MIT	2016
National University of Singapore	2014
University of Pennsylvania	2011
National Taiwan University	2010
Indian Institute of Technology Madras	2010
West Penn Hospital	2007

Others: Too numerous to count.

Teaching

CSE 490R Robotics	Winter 2017-
Paul G. Allen School for Computer Science & Engineering	
Brand new undergraduate-level robotics course on robotics in the real world. The course covers state estimation (particle filters, motion models, sensor models etc), planning/control (search based planners, lattice based planners, trajectory following techniques etc), and perception and learning (object detection, learning from demonstrations etc.). Student teams implement algorithms on the RACECAR platform developed by Prof. Srinivasa for the course.	
CSE 599 Advanced Robotics	Fall 2017-
Paul G. Allen School for Computer Science & Engineering	
Brand new graduate-level robotics course on motion planning algorithms. The course covers the Piano Movers Problem, sampling-based planning, minimum dispersion graphs, efficient search, lazy and anytime planning, planning under uncertainty with application to mobile manipulators and humanoid robots, with a focus on algorithmic foundations and theorem proving.	
16-843 Manipulation Algorithms	Fall 2012-16
The Robotics Institute, Carnegie Mellon University	

Brand new graduate-level robotics course on the theory and algorithms that enable robots to physically manipulate their world. The course covers the geometry of manipulation configuration spaces, motion planning in these spaces, synthesizing robust and stable grasps for dexterous hands, reconfiguring clutter, task-level planning of multi-stage manipulation, physics-based actions, and addressing perception and model uncertainty, with application to mobile manipulators and humanoid robots.

16-662 Robot Autonomy

Spring 2012-16

The Robotics Institute, Carnegie Mellon University

Brand new graduate-level robotics course on manipulation, motion planning, perception, navigation, and machine learning algorithms for mobile manipulators. The course covers theory and algorithms, and has a strong hands-on component where students implement their assignments and class projects on a real mobile manipulation platform.

16-741 Mechanics of Manipulation

Spring 2009

The Robotics Institute, Carnegie Mellon University

Co-taught with Matt Mason

Graduate-level robotics core course on model-based robotic manipulation. To develop techniques for rigid body mechanics, kinematic constraint, Coulomb friction, gravity, and impact, and apply these techniques to manipulation problems including picking and placing, parts orienting, assembly, and mobile manipulation.

Professional Activities

Board Member	RSS Foundation	2016-
Editor	International Journal of Robotics Research (IJRR)	2014-2022
Editor	IEEE/RSJ IROS	2014-2016
Editor	A Roadmap for U.S. Robotics: From Internet to Robotics	2013
Guest Editor	IJRR, RSS Special Issue	2013
Guest Editor	Autonomous Robots, RSS Special Issue	2013
Guest Editor	IEEE RAM, Special Issue on Mobile Manipulation	2012
Associate Editor	IEEE/RSJ IROS	2011-2012
Associate Editor	IEEE ICRA	2010-2013

Selected Organization

Organizer	UW CSE MSR Summer Institute on Social Robotics	2018
Program Chair	Robotics: Science and Systems (RSS)	2017
Organizer	Dagstuhl Seminar on Multimodal Manipulation Under Uncertainty	2015
Presentations Chair	IEEE IROS	2014
Chair	IEEE ICRA Best Manipulation Paper Award Committee	2013
Publications Chair	RSS	2013
Founding Program Chair	Robotics Track AAI	2012-2013
Senior Program Committee	AAAI	2012-2013
Founding Chair	IEEE RAS Technical Committee on Mobile Manipulation	2010-2012
Short Presentations Chair	RSS	2012
Area Chair	RSS	2011-2012

Workshops Organized: Too numerous to count.

Long-term Program Committees: International Conference on Human-Robot Interaction (HRI) 2012-; International Conference on Automated Planning and Scheduling (ICAPS) 2010-; Robotics: Science and Systems (RSS) 2009-; Workshop on the Algorithmic Foundations of Robotics (WAFR) 2012-; AAI Special Track on Physically Grounded AI 2009-2011.

University Service

Member	UW CSE Graduate Admissions Committee	2017-18
Member	RI Curriculum Program Committee	2015-2017
Member	RI Faculty Hiring Committee	2015-2017
Chair	SCS ACM Doctoral Dissertation Award Committee	2014
Chair	RI Admissions Committee	2014
Member	RI Director Search Committee	2014
Member	SCS Student Teaching Award Committee	2014
Member	SCS Graduate Fellowship Committee	2012-2014
Member	RI Admissions Committee	2012-2015
Member	QoLT Director Search Committee	2012

Grants

Current

US Army Research Laboratory 2020-21
Scalable, Adaptive, and Resilient Autonomy \$150,000
Title: *Safe, Fluent, and Generalizable Outdoor Autonomy*
co-PI, PI: Byron Boots, UW

HONDA 2018-21
HONDA Research Institute \$2,700,000
Title: *Formalizing Mathematical Models of Curiosity*
PI

Office of Naval Research (#ONR N00014-16-R-BA01) 2017-20
Long Range BAA for Navy and Marine Corps Science and Technology \$2,096,633
Title: *Enabling dexterous physics-based manipulation via a learning framework for shared autonomy*
PI

National Science Foundation (#1839371) 2018-21
Division of Mathematical Sciences, the Division of Computing and Communication Foundations, \$125,000
and the Division of Information and Intelligent Systems
Title: *Safe Imitation Learning for Robotics*
co-PI, PI: Zaid Harchaoui, UW

Past

RCTA T3 2017-18
Robotics Collaborative Technology Alliance \$355,594
Title: *Robust Outdoor Mobile Manipulation*
PI

Amazon 2017-18
Amazon Research Award \$80,000
Title: *Data Efficient Policy Search for Reinforcement Learning*
PI

National Science Foundation (#1748582) 2017-19
National Robotics Initiative (NRI) \$453,379
Title: *NRI: Collaborative Research: Learning Deep Sensorimotor Policies for Shared Autonomy*
PI, co-PI: Sergey Levine, Berkeley

National Science Foundation (#1544797) 2015-18
Cyber-Physical Systems (CPS) \$435,928

Title: <i>CPS: Synergy: Collaborative Research: Learning control sharing strategies for assistive cyber-physical systems</i> PI, co-PI: Brenna Argall, Northwestern	
National Science Foundation (#1409003) Robust Intelligence, Division of Information & Intelligent Systems (IIS) Title: <i>RI: Medium: The Foundations of a Manipulation Repertoire</i> Co-PI, PI: Matt Mason, Co-PI: Michael Erdmann, CMU	2014-18 \$358,737
National Institute of Health R01 (#R01EB019335) Title: <i>A Formalism for Customizing and Training Intelligent Assistive Devices</i> PI, co-PI: Brenna Argall, Northwestern	2014-17
Office of Naval Research (#ONR BAA 13-0001) ONR Basic Research Challenges in the Science of Autonomy Title: <i>Mental Simulation of Intentions for Collaborative Human-Robot Learning and Planning</i> co-PI, PI: Andrea Thomaz, Georgia Tech.	2014-17
Toyota Toyota Motor Engineering & Manufacturing (TEMA) Title: <i>Physics-based Intelligent Manipulation in Clutter</i> PI	2013-2017
Defense Advanced Research Projects Agency Simplifying Complexity in Scientific Discovery (SIMPLEX) Title: <i>An Architecture for Shared Autonomy via Optimal Control</i> PI	2015-16
Richard King Mellon Foundation Title: <i>Intelligent assistive technology for individuals with physical disabilities</i> PI	2016
Office of Naval Research Young Investigator Award (ONR-YIP) Title: <i>Enabling Advanced Autonomous Physical Manipulation Capabilities for Robots in Human-Robot Teams</i> PI	2012-15
Defense Advanced Research Projects Agency (#DARPA-BAA-12-39) Robotics Challenge Track A Co-PI, PI: Tony Stenz, CMU	2012-15
Intel Embedded Computing Science and Technology Center Title: <i>Lifelong Learning in the Real World</i> Joint PI with: Drew Bagnell, CMU	2012-14
ABB Research Grant Title: <i>In-hand manipulation with a simple gripper</i> co-PI, PI: Matt Mason, CMU	2013-14
Research for Advanced Manufacturing in Pennsylvania (RAMP) Title: <i>Robotics-enhanced, Cost-effective Motion Test Equipment for Inertial MEMS Devices</i> PI, co-PI: David Bourne, CMU. Industry Collaborator: Acutronic Inc.	2013
National Science Foundation (#1208388, \$ 150,456) National Robotics Initiative (NRI) Title: <i>Addressing Clutter and Uncertainty for Robotic Manipulation in Human Environments</i> PI, co-PI: Kevin Lynch, Northwestern	2012-13

National Science Foundation (#1228906, \$ 24,808) Robust Intelligence, Division of Information & Intelligent Systems (IIS) Title: <i>EAGER: Building Intelligent Mobile Manipulators for Assistive Care</i> Co-PI, PI: Matt Mason, CMU	2012-13
National Science Foundation (#0916557, \$ 515,079) Robust Intelligence, Division of Information & Intelligent Systems (IIS) Title: <i>A Simple but General Hand</i> Co-PI, PI: Matt Mason, CMU	2009-13
National Science Foundation (#0540865, \$ 16,105,954) Ret Supplements, Engineering Research Centers, Human Resources Development Title: <i>Quality of Life Technology Engineering Research Center</i> QoltBots Project Leader, PI: Takeo Kanade, CMU	2006-16
Defense Advanced Research Projects Agency (#DARPA-BAA-10-28) Autonomous Robotic Manipulation Software Track (ARM-S) Title: <i>REARM: Robust Extensible Autonomous Robotic Manipulation</i> Co-PI, PI: SRI	2010-11
National Science Foundation (#0646448, \$ 99,785) Small Business Phase II , Division of Industrial Innovation & Partnerships (IIP) Title: <i>Methodology for Applying Haptic Robotics to Agile Manufacturing</i> Subcontractor, PI: William Townsend, Barrett Technologies	2009-12

Selected Press Coverage ([Longer list](#))

2019	
Fast Company	The best interactive design of the year
Geek Wire	Robotic race car platform from Univ. of Washington designed to speed research around A.I.
BBC News	Robot arm can feed people with mobility issues
2018	
MIT Tech Review	Research robots sometimes left unsecured on the internet, study finds
KUOW Public Radio	The Record: Robotics
Washington Post	An expert explains how close we are to 'The Jetsons.'
GeekWire	UW's HERB robot makes cameo on X-Files as automated sushi waiter
2017 (moved to UW)	
BBC World Live	Autonomous Weapons that use AI
IEEE The Institute	IEEE Members Build Robots to Help People with Disabilities Live Independently
New York Times	Learning to love our robot co-workers
GeekWire	Robotics expert moves entire team to UW, including famous Oreo-cracking robot
2016	
Wired	Come on, Let's Give the Robots Hands Already
Discovery Channel	Robot Vision
Yahoo Tech	Meet the man building HERB – the closest thing we have to Rosie the Robot
Huffpost Tech	Robot Butler's Creativity Surprises Its Own Makers
Tech Republic	What Zuckerberg can learn from CMU's HERB
2015	
USA Today	Where the Jobs Are: Workers vs Automation
The Guardian	Robots are leaving the factory floor and heading for your desk — and your job
New York Times Magazine	Uber Would Like to Buy Your Robotics Department
Pittsburgh Post-Gazette	'Robots' like you have never seen them before

2014

National Geographic	Robots 3D IMAX Movie
Washington Post	HERB: A robot that can unload a dishwasher and (sometimes) take apart an Oreo
National Geographic	Going Deep with David Rees: How to open a door
The Verge	Robot city: how the machines are driving Pittsburgh's future
Pittsburgh Post Gazette	CMU play pairs HERB the robot with human actor
Politico	Robots at Work
Discovery Channel	When Will My Robotic Housekeeper Be Ready?
NPR	Robots that Care: The Quality of Life Technology Center Changing the World of Care-giving

2013

CNN	When it's too hard to separate Oreos...
Discovery Channel	Autonomous Robot Comprehends Objects On Its Own
New York Times	Disruptions: Helper Robots Are Steered, Tentatively, to Care for the Aging
Wall Street Journal	Not the Jetsons, but Rosie could be your nurse
Time Magazine	Welcome to Roboburgh
CBS	Robotic Servants are here to help

2012

Engadget	Robotic butlers, bartenders and receptionists at Carnegie Mellon
Popular Science	HERB the Robot Butler Microwaves Your Dinner For You
Time Magazine	Meet HERB, the Robot Butler That Knows How to Use a Microwave
Fast Company	This Week In Bots: Will Your Kids Give Robots Civil Liberties?
NPR	Marketplace: Good Robots Make Jobs
National Geographic	Us. And them. Robots are being created that can think, act, and relate to humans. Are we ready?

2007-2011 (At Intel)

NSF Science Nation	HERB: A robot to help around the house
Scientific American	Can Robots Be Programmed to Learn from Their Own Experiences?
BBC	The dawn of intelligent machines
Businessweek	World's most advanced robots
Fast Company	Intel's Robot Butler Serves, Clears, and Does Dishes
Wired Magazine	Butler Robot Can Fetch Drinks, Snacks
Granta	What I think about when I think about robots
Discovery Channel	The robot butler
Popular Science	Rise of the Helpful Machines: Meet 10 of the most advanced human-assist 'bots from around the world

Extracurricular

- 140/13,072=0.01-th Place overall and 12/790=0.01-th Place in age group, Pittsburgh Half Marathon, 2017
- 6th Place overall and 1st Place in age group, Montour Trail Half Marathon, 2016
- 3rd Place, Finish MS 5M Run, 2015
- Fastest advisor-student time, Random Distance Run, 2013
- LaSalle Bank Chicago Marathon 2007, 2008
- Pittsburgh AB Squash League champion 2005
- Pittsburgh C Squash League champion 2002
- Institute silver medalist in Badminton, Indian Institute of Technology Madras 1998
- Institute bronze medalist in Tennis, Indian Institute of Technology Madras 1997, 1998