Prof. Siddhartha Srinivasa

The Personal Robotics Lab
Paul G. Allen School of Computer Science & Engineering
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Employment

Professor 2022-
Computer Science & Engineering Department, The University of Washington at Seattle

Boeing Endowed Professor in Computer Science & Engineering 2017-22
Computer Science & Engineering Department, The University of Washington at Seattle

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 Thesis: *Control Synthesis for Dynamic Contact Manipulation*

B. Tech., Indian Institute of Technology Madras (IITM) August 1999
Advisor: A. Radhakrishnan Thesis: *Reverse Engineering using the Structured Lighting Technique*

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-
Adaptive Robot-Assisted Feeding: An Online Learning Framework for Acquiring Previously-Unseen Food Items
William Agnew 2017-
Human Priors for Reinforcement Learning
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
Optimizing the Design of Robot Environments via Interleaved Optimization and White-Box Motion-Planning Researcher @ Motional

Brian Hou 2016-2022

Robot Motion Planning with Uncertainty and Urgency — Researcher @ Aurora

Samuel Ainsworth — 2016-2022
Perspectives on Policy Learning — Researcher @ Cruise

Patrick Lancaster (+Josh Smith) — 2014-2022
Towards Dexterous In-Hand Manipulation via Electrostatic Braking and Pre-touch Sensing — Postdoc @ Meta

Aditya Vamsikrishna — 2016-2021
Efficient Robot Motion Planning in Cluttered Environments — Researcher @ Aurora

Gilwoo Lee — 2015-2020
Scalable Bayesian Reinforcement Learning — Founder @ Zordi

Stefanos Nikolaidis — 2014-2018
Mathematical Models of Adaptation in Human-Robot Collaboration — Assistant Professor @ USC

Laura Herlant — 2013-2018
Algorithms and Implementation and Studies on Eating with a Shared Control Robot Arm — Senior Robotics Research Scientist @ iRobot

Zita Marinho (+Geoff Gordon) — 2012-2018
Moment-based Algorithms for Structured Prediction — Researcher @ Sacoor Brothers

Shervin Javdani (+Drew Bagnell) — 2011-2017
Acting under Uncertainty for Information Gathering and Shared Autonomy — Robotics Engineer @ Aurora

Matt Klingensmith (+Michael Kaess) — 2013-2016
Tracking and Calibrating Robot Arms using SLAM Techniques — Roboticist @ Boston Dynamics

Jennifer King — 2012-2016
Robust Rearrangement Planning using Nonprehensile Interaction — Researcher @ Berkshire Grey

Michael Koval (+Nancy Pollard) — 2012-2016
Robust Manipulation via Contact Sensing — Software Engineer @ Waymo

Christopher Dellin — 2009-2016
Completing Manipulation Tasks Efficiently in Complex Environments — Roboticist @ Nuro

Anca Dragan — 2009-2015
Legible Robot Motion Planning — Associate Professor @ Berkeley

Mehmet Dogar — 2008-2013
A Framework for Manipulation in Cluttered Environments — Associate Professor @ Leeds

Alvaro Collet (+Martial Hebert) — 2009-2012
Lifelong Robotic Object Perception — Engineering Lead @ Facebook

Dmitry Berenson (+James Kuffner) — 2006-2011
Constrained Manipulation Planning — Associate Professor @ Michigan

Alumni - M.S.

Jeongseok Lee — 2016-2018
A Linear-Time Variational Integrator for Multibody Systems — Researcher @ Meta

Pengju Jin — 2017-2017
Highly Robust Pose Estimation from Single Frame RGBD — Researcher @ Aurora

Shushman Choudhury — 2015-2017
Anytime Geometric Motion Planning on Large Dense Roadmaps — Ph.D. @ Stanford

Rosario Scalise (+Stephanie Rosenthal) — 2015-2017
Human-Centered Design of Robot Explanations — Ph.D. @ UW

Shen Li (+Stephanie Rosenthal) — 2015-2017
Automatically Evaluating and Generating Clear Robot Explanations — Ph.D. @ MIT

Evan Shapiro — 2013-2015
A Hierarchical Framework for Configuration Space Task Planning — CEO @ Mina Foundation

Aaron Walsman — 2013-2015
ROCK: Robust Object Constellation for Kinematic Pose — Ph.D. @ UW

Elizabeth Cha (+Jodi Forlizzi) — 2012-2014
Robots in the Home: Qualitative and Quantitative Insights into Kitchen Organization — Researcher @ Waymo

Kyle Strabala — 2010-2012
Learning the Communication of Intent Prior to Physical Collaboration — Scientist @ Near Earth Autonomy

Garratt Gallagher (+Drew Bagnell) — 2007-2009
GATMO: A Generalized Approach to Tracking Movable Objects — Google Robotics

Martin Herrmann (+Dr.-Inf. Uwe Hanebeck @ Universitat Karlsruhe) — 2009-2009
Active scene and object reconstruction for robotic manipulation from vision and laser — TU Braunschweig

Jeongseok Lee, M.S. — 2016-18
Thesis: *A Linear-Time Variational Integrator for Multibody Systems* — Now: Engineer, Amazon

Pengju Jin, M.S. — 2017
Thesis: *Highly Robust Pose Estimation from Single Frame RGBD* — Now: Researcher, Aurora

Shushman Choudhury, M.S. — 2015-2017
Thesis: *Anytime Geometric Motion Planning on Large Dense Roadmaps* — Now: Ph.D. Stanford

Rosario Scalise, M.S. (+Stephanie Rosenthal) — 2015-2017
Thesis: *Human-Centered Design of Robot Explanations* — Now: Research Staff, UW

Shen Li, M.S. (+Stephanie Rosenthal) — 2015-2017
Thesis: *Automatically Evaluating and Generating Clear Robot Explanations* — Now: Ph.D., MIT

Evan Shapiro, M.S. — 2013-15
Thesis: *A Hierarchical Framework for Configuration Space Task Planning* — Now: CEO, Coda Protocol

Aaron Walsman, M.S. — 2013-15
Thesis: *ROCK: Robust Object Constellation for Kinematic Pose* — Now: Ph.D. UW

Elizabeth Cha, M.S. (+Jodi Forlizzi) — 2012-14
Thesis: *Robots in the Home: Qualitative and Quantitative Insights into Kitchen Organization* — Now: Engineer, Waymo

Kyle Strabala, M.S. — 2010-2012
Thesis: *Learning the Communication of Intent Prior to Physical Collaboration* — Now: Scientist, Near Earth Autonomy

Garratt Gallagher, M.S. (+Drew Bagnell) 2007-2009
Thesis: *GATMO: A Generalized Approach to Tracking Movable Objects* Now: Google Robotics

Martin Herrmann, M.S. (+Dr.-Inf. Uwe Hanebeck, Universität Karlsruhe) 2009
Thesis: *Active scene and object reconstruction for robotic manipulation from vision and laser* Now: TU Braunschweig

Alvaro Collet, M.S. (+Chris Atkeson) 2007-2009
Thesis: *Object Recognition and Full Pose Registration from a Single Image for Robotic Manipulation*

Alumni - Other

Ajinkya Kamat, Staff 2018-2019
Research: *Outdoor Unstructured Mobile Manipulation* Now: MRSD, CMU

Youngsun Kim, Staff 2017-2019
Research: *Robot-Assisted Feeding* Now: Engineer, Amazon

Hanjun Song, Staff 2016-2019
Research: *Sensing Shear Forces During Food Manipulation* Now: Ph.D. MIT

Rachel Holladay, B.S. 2013-2017
Thesis: *Following Paths in Task Space: Distance Metrics and Planning Algorithms* Now: Ph.D. MIT

Pyry Matikainen, Teaching Fellow 2015-2017
Research: *Visual Computing*

Prasanna Velagapudi, Research Scientist 2012-2014
Research: *Multi-Step Mobile Manipulation* Now: Director of Engineering, Berkshire Grey

Graduate Interns

Rishabh Madan (IIT Kharagpur)	2019-2020
Sara Sheikholeslami (UBC)	2019
Lerrel Pinto (CMU)	Summer 2019
Daniel Gallenberger (TU Munich)	Spring 2018
Stefania Pellegrinelli (ITIA-CNR)	Fall 2015
Marco Cognetti (University of Rome)	Spring 2015
Joshua Haustein (Universität Karlsruhe)	2014
Henny Admoni (Yale)	Summer 2013
Georg Bartels (TU Bremen)	Summer 2013
Katie Correll	Spring 2013
Michael Koval	Summer 2012
Steven Gray (Penn)	Summer 2011
Vincenzo Micelli (University of Parma)	January 2011 - August 2011
Tim Niemueller (RWTH Aachen)	July 2010 - December 2010
Peter Kaiser (Universität Karlsruhe)	September 2010 - December 2010
Maya Cakmak (Georgia Tech)	Summer 2010
Alex Sorokin (UIUC)	September 2009 - April 2010
Lillian Chang	Summer 2009
Ross Knepper	Summer 2009
Laura Lindzey	Summer 2009
Manel Martinez	June-November 2009
Julius Ziegler (Universität Karlsruhe)	August-November 2009
Nico Blodow (TU Munich)	February-April 2009
Geoffrey Hollinger	Summer 2008

Kevin Peterson	Summer 2008
Nathan Ratliff	Summer 2007, 2008
Martin Rufli (ETH, Zürich)	Summer 2008
Rosen Diankov	September 2008 - January 2009
Michael Ashley-Rollman	Summer 2006
Stuart Anderson	Summer 2006
Michael DeRosa	Summer 2006
Ashish Deshpande (U.Mich)	Summer 2006
Jiaxin Fu	Summer 2006
Preethi Bhatt	Summer 2006

Undergraduate Interns

Sumegh Roychowdhury (IIT Kharagpur)	Summer 2020
Sidharth Talia (Bharati Vidyapeeth College of Engineering)	Summer 2020
Rajat Kumar Jenamani (IIT Kharagpur)	Summer 2019
Jeffrey Maxwell	2019
Shivam Singhal	2019
Savanna Yee	2018
Nanda Sundaresan	2018
Kaiden James Field	2018
Connor Geiman	2018
Tao Jin	2018
Rahul Vernwal (IIT Kharagpur)	Summer 2018
Maha Alrashed (BU)	Summer 2018
Abdullah Albakry (NC State)	Summer 2018
Ramon (Yiren) Qu	2017-
Nanda Sundaresan	2017
Jeffrey Maxwell	2017
Vinitha Ranganeni	Spring 2015-2017
Kevin Zhang	Spring 2015-2017
Pengju Jin	Fall 2014-2017
Joey Fernau	Spring 2015
Angela Wang	Fall 2014
Peter McHale	Fall 2014
Vikram Sunder	Spring 2014
Don Zheng	Spring 2014
Neil Jassal	Spring 2014
Myles Blodnick	Spring 2014
Scott Martin	Spring 2014
Yuyang Guo	Fall 2013 - Fall 2014
Rachel Holladay	Fall 2013-2017
Andrey Kurenkov (Georgia Tech)	Summer 2013
Abhijeet Tallavajhula (IIT)	Summer 2012
Bo Xiong (Connecticut)	Summer 2012
Corina Guaru (Jacobs)	Summer 2012
Debidatta Dwebi (IIT)	Summer 2012
Kenton Lee (Penn)	Summer 2012
Dominic Zirbel	Summer 2012
Tom Mullins	Fall 2011
Nick Stanley	Fall 2011
Alex Zirbel	Fall 2011 - Fall 2012
Tudor Achim	Summer 2009-Fall 2010
Andrew Yeager	Fall 2009
Ian-Clanton Thuon	Fall 2008 - Spring 2009
Daniel Dewey	Summer 2007 - Spring 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. *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. volume 46, pages 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 & 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.

[57] W. Agnew, C. Xie, A Walsman, O. Murad, C. Wang, P. Domingos, and S. S. Srinivasa. Amodal 3d reconstruction for robotic manipulation via stability and connectivity. In *Conference on Robot Learning*, 2020.

[58] T. Bhattacharjee, E.K. Gordon, R. Scalise, M.E. Cabrera, A. Caspi, M. Cakmak, and S.S. Srinivasa. Is more autonomy always better? exploring preferences of users with mobility impairments in robot-assisted feeding. In *ACM/IEEE International Conference on Human-Robot Interaction*, 2020.

[59] E.K. Gordon, X. Meng, T. Bhattacharjee, M. Barnes, and S.S. Srinivasa. Adaptive Robot-Assisted Feeding: An Online Learning Framework for Acquiring Previously-Unseen Food Items. In *IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2020.

[60] B. Hou, S. Choudhury, G. Lee, A. Mandalika, and S.S. Srinivasa. Posterior Sampling for Anytime Motion Planning on Graphs with Expensive-to-Evaluate Edges. In *IEEE International Conference on Robotics and Automation*, 2020.

[61] L. Ke, S. Choudhury, M. Barnes, W. Sun, G. Lee, and S.S. Srinivasa. Imitation Learning as f-Divergence Minimization. In *Workshop on the Algorithmic Foundations of Robotics*, 2020.

[62] L. Ke, A. Kamat, J Wang, T. Bhattacharjee, C Mavrogiannis, and S.S. Srinivasa. Telemanipulation with Chopsticks: Analyzing Human Factors in User Demonstrations. In *IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2020.

[63] J. Roh*, C. Mavrogiannis*, R. Madan*, Dieter Fox, and S. S. Srinivasa. Multimodal trajectory prediction via topological invariance for navigation at uncontrolled intersections. In *Conference on Robot Learning*, 2020.

[64] V. Roulet, M. Fazel, S.S. Srinivasa, and Z. Harchaoui. On the Convergence of the Iterative Linear Exponential Quadratic Gaussian Algorithm to Stationary Points. In *American Controls Conference*, 2020.

[65] J. Spencer, S. Choudhury, M. Barnes, M. Schmittle, M. Chiang, P. Ramadge, and S.S. Srinivasa. Learning from interventions: Human-robot interaction as both explicit and implicit feedback. In *Robotics: Science and Systems*, 2020.

[66] C. Summers, K. Lowrey, A. Rajeswaran, S.S. Srinivasa, and E. Todorov. Lyceum: An Efficient and Scalable Ecosystem for Robot Learning. In *Learning for Dynamics & Control*, 2020.

[67] S. Ainsworth, M. Barnes, and S.S. Srinivasa. Mo states Mo problems: Emergency stop mechanisms from observation. In *Advances in Neural Information Processing Systems*, 2019.

[68] M. Bhardwaj, S. Choudhury, B. Boots, and S. Srinivasa. Leveraging Experience in Lazy Search. In *Robotics: Science and Systems*, 2019.

[69] T. Bhattacharjee, M.E. Cabrera, A. Caspi, M. Cakmak, and S.S. Srinivasa. A community-centered design framework for robot-assisted feeding systems. In *International ACM SIGACCESS Conference on Computers and Accessibility*, 2019.

[70] L. Chan, D. Hadfield-Menell, S.S. Srinivasa, and A.D. Dragan. The assistive multi-armed bandit. In *ACM/IEEE International Conference on Human-Robot Interaction*, 2019.

[71] R. Feng, Y. Kim, G. Lee, E.K. Gordon, M. Schmittle, S. Kumar, T. Bhattacharjee, and S.S. Srinivasa. Robot-assisted feeding: Generalizing skewering strategies across food items on a plate. In *International Symposium on Robotics Research*, 2019.

[72] D. Gallenberger, T. Bhattacharjee, Y. Kim, and S.S. Srinivasa. Transfer depends on acquisition: Analyzing manipulation strategies for robotic feeding. In *ACM/IEEE International Conference on Human-Robot Interaction*, 2019. **Best Paper Award Winner for Technical Advances in HRI**.

[73] L. Ke, X. Li, Y. Bisk, A. Holtzman, Z. Gan, J. Liu, J. Gao, Y. Choi, and S.S. Srinivasa. Tactical rewind: Self-correction via backtracking in vision-and-language navigation. In *IEEE Conference on Computer Vision and Pattern Recognition*, 2019. **Oral**.

[74] R. Kumar, A. Mandalika, S. Choudhury, and S.S. Srinivasa. LEGO: Leveraging experience in roadmap generation for sampling-based planning. In *IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2019.

[75] P. Lancaster, J.R. Smith, and S.S. Srinivasa. Improved proximity, contact, and force sensing via optimization of elastomer-air interface geometry. In *IEEE International Conference on Robotics and Automation*, 2019.

[76] G. Lee, Z. Deng, S. Ma, T. Shiratori, S.S. Srinivasa, and Y. Sheikh. Talking with hands 16.2m: A large-scale dataset of synchronized body-finger motion and audio for conversational motion analysis and synthesis. In *International Conference on Computer Vision*, 2019.

[77] G. Lee, B. Hou, A. Mandalika, J. Lee, S. Choudhury, and S.S. Srinivasa. Bayesian policy optimization for model uncertainty. In *International Conference on Learning Representations*, 2019.

[78] A. Mandalika, S. Choudhury, O. Salzman, and S.S. Srinivasa. Generalized Lazy Search for Robot Motion Planning: Interleaving Search and Edge Evaluation via Event-based Toggles. In *International Conference on Automated Planning and Scheduling*, 2019. **Best Student Paper Award Winner**.

[79] S. Niyaz, A. Kuntz, O. Salzman, R. Alterovitz, and S.S. Srinivasa. Optimizing motion-planning problem setup via bounded evaluation with application to following surgical trajectories. In *IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2019.

[80] V. Roulet, S.S. Srinivasa, D. Drusvyatskiy, and Z. Harchaoui. Iterative Linearized Control: Stable Algorithms and Complexity Guarantees. In *International Conference on Machine Learning*, 2019.

[81] R. Rowe, S. Singhal, D. Yi, T. Bhattacharjee, and S.S. Srinivasa. Desk organization: Effect of multimodal inputs on spatial relational learning. In *IEEE International Symposium on Robot and Human Interactive Communication*, 2019.

[82] B. Saund, S. Choudhury, S.S. Srinivasa, and D. Berenson. The blindfolded robot : A bayesian approach to planning with contact feedback. In *International Symposium on Robotics Research*, 2019.

[83] R. Scalise, J. Thomason, Y. Bisk, and S.S. Srinivasa. Improving robot success detection using static object data. In *IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2019.

[84] H. Song, T. Bhattacharjee, and S.S. Srinivasa. Sensing shear forces during food manipulation: Resolving the trade-off between range and sensitivity. In *IEEE International Conference on Robotics and Automation*, 2019.

[85] T. Weng, L. Perlmutter, S. Nikolaidis, S.S. Srinivasa, and M. Cakmak. Robot object referencing through situated legible projections. In *IEEE International Conference on Robotics and Automation*, 2019.

[86] R. Aronson, T. Santini, T. Kübler, E. Kasneci, S.S. Srinivasa, and H. Admoni. Eye-hand behavior in human-robot shared manipulation. In *ACM/IEEE International Conference on Human-Robot Interaction*, 2018.

[87] M. Chen*, S. Nikolaidis*, H. Soh, D. Hsu, and S.S. Srinivasa. Planning with trust for human-robot collaboration. In *ACM/IEEE International Conference on Human-Robot Interaction*, 2018. **Best Conference Paper Award Finalist**.

[88] S. Choudhury, S.S. Srinivasa, and S. Scherer. Bayesian active edge evaluation on expensive graphs. In *International Joint Conference on Artificial Intelligence*, 2018.

[89] N. Haghtalab, S. Mackenzie, A.D. Procaccia, O Salzman, and S.S. Srinivasa. The Provable Virtue of Laziness in Motion Planning. In *International Conference on Automated Planning and Scheduling*, 2018. **Best Conference Paper Award Winner**.

[90] A. Hefny, Z. Marinho, W. Sun, S.S. Srinivasa, and G. Gordon. Recurrent predictive state policy networks. In *International Conference on Machine Learning*, 2018.

[91] J. Lee, D. Yi, and S.S. Srinivasa. Sampling of pareto-optimal trajectories using progressive objective evaluation in multi-objective motion planning. In *IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2018.

[92] A. Mandalika, O. Salzman, and S.S. Srinivasa. Lazy Receding Horizon A* for Efficient Path Planning in Graphs with Expensive-to-Evaluate Edges. In *International Conference on Automated Planning and Scheduling*, 2018.

[93] S. Niyaz, A. Kuntz, O. Salzman, R. Alterovitz, and S.S. Srinivasa. Following surgical trajectories with concentric tube robots via nearest-neighbor graphs. In *International Symposium on Experimental Robotics*, 2018.

[94] S. Sheikholeslami, G. Lee, J.W. Hart, S.S. Srinivasa, and E.A. Croft. A study of reaching motions for collaborative human-robot interaction. In *International Symposium on Experimental Robotics*, 2018.

[95] D. Yi, R. Thakker, C. Gulino, O. Salzman, and S.S. Srinivasa. Generalizing informed sampling for asymptotically-optimal sampling-based kinodynamic planning via markov chain monte carlo. In *IEEE International Conference on Robotics and Automation*, 2018.

[96] S. Choudhury, S. Javdani, S.S. Srinivasa, and S. Scherer. Near-optimal edge evaluation in explicit generalized binomial graphs. In *Advances in Neural Information Processing Systems*, 2017.

[97] S. Choudhury, O. Salzman, S. Choudhury, and S.S. Srinivasa. Densification strategies for anytime motion planning over large dense roadmaps. In *IEEE International Conference on Robotics and Automation*, 2017.

[98] S. Choudhury and S.S. Srinivasa. A bayesian active learning approach to adaptive motion planning. In *International Symposium on Robotics Research*, 2017.

[99] A. Hefny, Z. Marinho, C. Downey, W. Sun, S.S. Srinivasa, and G. Gordon. Predictive state models for prediction and control in partially observable environments. In *Conference on Robot Learning*, 2017.

[100] P. Jin, P. Matikainen, and S.S. Srinivasa. Sensor fusion for fiducial tags: Highly robust pose estimation from single frame RGBD. In *IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2017.

[101] J. King, V. Ranganeni, and S.S. Srinivasa. Unobservable monte carlo planning for nonprehensile rearrangement tasks. In *IEEE International Conference on Robotics and Automation*, 2017.

[102] M. Klingensmith, M. Koval, S.S. Srinivasa, N. Pollard, and M. Kaess. The manifold particle filter for state estimation on high-dimensional implicit manifolds. In *IEEE International Conference on Robotics and Automation*, 2017.

[103] S. Nikolaidis, S. Nath, A. Procaccia, and S.S. Srinivasa. Game-theoretic modeling of human adaptation in human-robot collaboration. In *ACM/IEEE International Conference on Human-Robot Interaction*, 2017.

[104] S. Nikolaidis and S.S. Srinivasa. Modeling human adaptation in repeated collaborative tasks. In *International Conference on Pervasive Technologies Related to Assistive Environments*, 2017.

[105] S. Nikolaidis, Zhu. Y., D. Hsu, and S.S. Srinivasa. Human-robot mutual adaptation in shared autonomy. In *ACM/IEEE International Conference on Human-Robot Interaction*, 2017.

[106] J. Pajarinen, V. Kyrki, M. Koval, S.S. Srinivasa, J. Peters, and G. Neumann. Hybrid control trajectory optimization under uncertainty. In *IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2017.

[107] O. Salzman, B. Hou, , and S.S. Srinivasa. Efficient motion planning for problems lacking optimal substructure. In *International Conference on Automated Planning and Scheduling*, 2017.

[108] D. Yi, S. Choudhury, and S.S. Srinivasa. Incorporating qualitative information into quantitative estimation via sequentially constrained hamiltonian monte carlo sampling. In *IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2017.

[109] S. Choudhury, C. Dellin, and S.S. Srinivasa. Pareto-optimal search over configuration space beliefs for anytime motion planning. In *IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2016.

[110] S. Choudhury, J. Gammell, T. Barfoot, and S.S. Srinivasa. Regionally accelerated batch informed trees (RABIT*): A framework to integrate local information into optimal path planning. In *IEEE International Conference on Robotics and Automation*, 2016.

[111] C. Dellin and S.S. Srinivasa. A unifying formalism for shortest path problems with expensive edge evaluations via lazy best-first search over paths with edge selectors. In *International Conference on Automated Planning and Scheduling*, 2016.

[112] L. Herlant, R. Holladay, and S.S. Srinivasa. Assistive teleoperation of robot arms via automatic time-optimal mode switching. In *ACM/IEEE International Conference on Human-Robot Interaction*, 2016.

[113] R. Holladay and S.S. Srinivasa. Distance metrics and algorithms for task space path optimization. In *IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2016.

[114] A. Johnson, J. King, and S.S. Srinivasa. Convergent planning. In *IEEE International Conference on Robotics and Automation*, 2016.

[115] J. King, M. Cognetti, and S.S. Srinivasa. Rearrangement planning using object-centric and robot-centric action spaces. In *IEEE International Conference on Robotics and Automation*, 2016.

[116] M. Klingensmith, S.S. Srinivasa, and M. Kaess. Articulated robot manipulator simultaneous localization and mapping (ARM-SLAM). In *IEEE International Conference on Robotics and Automation*, 2016. **Best Vision Paper Award Finalist**.

[117] M. Koval, D. Hsu, N.S. Pollard, and S.S. Srinivasa. Configuration lattices for planar contact manipulation under uncertainty. In *Workshop on the Algorithmic Foundations of Robotics*, 2016.

[118] J.S. Lee, K.C. Liu, F.C. Park, and S.S. Srinivasa. A linear-time variational integrator for multibody systems. In *Workshop on the Algorithmic Foundations of Robotics*, 2016.

[119] S. Li, Scalise. R., H. Admoni, S.S. Srinivasa, and Rosenthal. S. Spatial references and perspective in natural language instructions for collaborative manipulation. In *IEEE International Symposium on Robot and Human Interactive Communication*, 2016.

[120] Z. Marinho, B. Boots, A. Dragan, A. Byravan, G. Gordon, and S.S. Srinivasa. Functional gradient motion planning in reproducing kernel hilbert spaces. In *Robotics: Science and Systems*, 2016.

[121] S. Nikolaidis, A.D. Dragan, and S.S. Srinivasa. Viewpoint-based legibility optimization. In *ACM/IEEE International Conference on Human-Robot Interaction*, 2016.

[122] S. Nikolaidis, D. Hsu, and S.S. Srinivasa. Formalizing human-robot mutual adaptation via a bounded memory based model. In *ACM/IEEE International Conference on Human-Robot Interaction*, 2016.

[123] S. Pellegrinelli, H. Admoni, S. Javdani, and S.S. Srinivasa. Human-robot shared workspace collaboration via hindsight optimization. In *IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2016.

[124] S.S. Srinivasa, A. Johnson, G. Lee, M. Koval, S. Choudhury, J. King, C. Dellin, M. Harding, D. Butterworth, P. Velagapudi, and A. Thackston. A system for multi-step mobile manipulation: Architecture, algorithms, and experiments. In *International Symposium on Experimental Robotics*, 2016.

[125] E. Cha, A.D. Dragan, and S.S. Srinivasa. Perceived robot capability. In *IEEE International Symposium on Robot and Human Interactive Communication*, 2015.

[126] E. Cha, J. Forlizzi, and S.S. Srinivasa. Robots in the home: Qualitative and quantitative insights into kitchen organization. In *ACM/IEEE International Conference on Human-Robot Interaction*, 2015.

[127] Y. Chen, S. Javdani, A. Karbasi, J.A. Bagnell, S.S. Srinivasa, and A. Krause. Submodular surrogates for value of information. In *AAAI Conference on Artificial Intelligence*, 2015.

[128] C. Dellin and S.S. Srinivasa. A general technique for fast comprehensive multi-root planning on graphs by coloring vertices and deferring edges. In *IEEE International Conference on Robotics and Automation*, 2015.

[129] A.D. Dragan, S. Bauman, J. Forlizzi, and S.S. Srinivasa. Effects of robot motion on human-robot collaboration. In *ACM/IEEE International Conference on Human-Robot Interaction*, 2015.

[130] A.D. Dragan, K. Muelling, J.A. Bagnell, and S.S. Srinivasa. Movement primitives via optimization. In *IEEE International Conference on Robotics and Automation*, 2015. **Best Conference Paper Award Finalist**.

[131] J.D. Gammell, S.S. Srinivasa, and T. Barfoot. Batch Informed Trees (BIT*): Sampling-based optimal planning via the heuristically guided search of implicit random geometric graphs. In *IEEE International Conference on Robotics and Automation*, 2015.

[132] J.A. Haustein, J. King, S.S. Srinivasa, and T. Asfour. Kinodynamic randomized rearrangement planning via dynamic transitions between statically stable configurations. In *IEEE International Conference on Robotics and Automation*, 2015.

[133] V. Hwang, M. Phillips, S.S. Srinivasa, and M. Likhachev. Lazy validation of experience graphs. In *IEEE International Conference on Robotics and Automation*, 2015.

[134] S. Javdani, S.S. Srinivasa, and J.A. Bagnell. Shared autonomy via hindsight optimization. In *Robotics: Science and Systems*, 2015.

[135] J. King, J.A. Haustein, S.S. Srinivasa, and T. Asfour. Nonprehensile whole arm rearrangement planning with physics manifolds. In *IEEE International Conference on Robotics and Automation*, 2015.

[136] M. Klingensmith, I. Dryanovski, S.S. Srinivasa, and J. Xiao. CHISEL: Real time large scale 3d reconstruction onboard a mobile device. In *Robotics: Science and Systems*, 2015. **Best Systems Paper Award Finalist**.

[137] M. Koval, J. King, N.S. Pollard, and S.S. Srinivasa. Robust trajectory selection for rearrangement planning as a multi-armed bandit problem. In *IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2015.

[138] H. Admoni, A.D. Dragan, S.S. Srinivasa, and B. Scassellati. Deliberate delays during robot-to-human handovers improve compliance with gaze communication. In *ACM/IEEE International Conference on Human-Robot Interaction*, 2014.

[139] A. Byravan, B. Boots, S.S. Srinivasa, and D. Fox. Space-time functional gradient optimization for motion planning. In *IEEE International Conference on Robotics and Automation*, 2014.

[140] N. Chavan-Dafle, A. Rodriguez, R. Paolini, B. Tang, S.S. Srinivasa, M. Erdmann, M.T. Mason, I. Lundberg, H. Staab, and T. Fuhlbrigge. Extrinsic dexterity: In-hand manipulation with external forces. In *IEEE International Conference on Robotics and Automation*, 2014. **Best Video Award Finalist**.

[141] C. Dellin, K. Strabala, G.C. Haynes, D. Stager, and S.S. Srinivasa. Guided manipulation planning at the DARPA robotics challenge trials. In *International Symposium on Experimental Robotics*, 2014.

[142] A.D. Dragan, R. Holladay, and S.S. Srinivasa. An analysis of deceptive robot motion. In *Robotics: Science and Systems*, 2014.

[143] A.D. Dragan and S.S. Srinivasa. Familiarization to robot motion. In *ACM/IEEE International Conference on Human-Robot Interaction*, 2014.

[144] J. Gammell, S.S. Srinivasa, and T. Barfoot. Informed RRT*: Optimal sampling-based path planning focused via direct sampling of an admissible ellipsoidal heuristic. In *IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2014.

[145] R. Holladay, A.D. Dragan, and S.S. Srinivasa. Legible robot pointing. In *IEEE International Symposium on Robot and Human Interactive Communication*, 2014.

[146] S. Javdani, Y. Chen, A. Karbasi, A. Krause, J.A. Bagnell, and S.S. Srinivasa. Near optimal bayesian active learning for decision making. In *International Conference on Artificial Intelligence and Statistics*, 2014.

[147] S.K. Kim, J. Jo, Y. Oh, S.R. Oh, S.S. Srinivasa, and M. Likhachev. Robotic handwriting: Multi-contact manipulation based on reactional internal contact hypothesis. In *IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2014.

[148] M. Klingensmith, M. Herrmann, and S.S. Srinivasa. Object modeling and recognition from sparse, noisy data via voxel depth carving. In *International Symposium on Experimental Robotics*, 2014.

[149] M. Koval, N.S. Pollard, and S.S. Srinivasa. Pre- and post-contact policy decomposition for planar contact manipulation under uncertainty. In *Robotics: Science and Systems*, 2014.

[150] L. Lindzey, R.A. Knepper, H. Choset, and S.S. Srinivasa. The feasible transition graph: Encoding topology and manipulation constraints for multirobot push-planning. In *Workshop on the Algorithmic Foundations of Robotics*, 2014.

[151] A. Collet, B. Xiong, C. Gurau, M. Hebert, and S.S. Srinivasa. Exploiting domain knowledge for object discovery. In *IEEE International Conference on Robotics and Automation*, 2013.

[152] M.R. Dogar, M.C. Koval, A. Tallavajhula, and S.S. Srinivasa. Object search by manipulation. In *IEEE International Conference on Robotics and Automation*, 2013.

[153] A.D. Dragan, K.T. Lee, and S.S. Srinivasa. Legibility and predictability of robot motion. In *ACM/IEEE International Conference on Human-Robot Interaction*, 2013.

[154] A.D. Dragan and S.S. Srinivasa. Generating legible motion. In *Robotics: Science and Systems*, 2013. **Best Conference Paper Award Finalist**.

[155] S. Javdani, M. Klingensmith, J.A. Bagnell, N.S. Pollard, and S.S. Srinivasa. Efficient touch based localization through submodularity. In *IEEE International Conference on Robotics and Automation*, 2013. **Best Manipulation Paper Award Finalist**.

[156] J. King, M. Klingensmith, C. Dellin, M. Dogar, P. Velagapudi, N. Pollard, and S.S. Srinivasa. Pregrasp manipulation as trajectory optimization. In *Robotics: Science and Systems*, 2013.

[157] M.C. Koval, M.R. Dogar, N.S. Pollard, and S.S. Srinivasa. Manifold representations for state estimation in contact manipulation. In *International Symposium on Robotics Research*, 2013.

[158] M.C. Koval, M.R. Dogar, N.S. Pollard, and S.S. Srinivasa. Pose estimation for contact manipulation with manifold particle filters. In *IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2013.

[159] C.M. Dellin and S.S. Srinivasa. A framework for extreme locomotion planning. In *IEEE International Conference on Robotics and Automation*, 2012.

[160] M. Dogar, K. Hsiao, M. Ciocarlie, and S.S. Srinivasa. Physics-based grasp planning through clutter. In *Robotics: Science and Systems*, 2012.

[161] A.D. Dragan and S.S. Srinivasa. Formalizing assistive teleoperation. In *Robotics: Science and Systems*, 2012. **Best Conference Paper Award Finalist**.

[162] A.D. Dragan and S.S. Srinivasa. Online customization of teleoperation interfaces. In *IEEE International Symposium on Robot and Human Interactive Communication*, 2012. **Best Conference Paper Award Finalist**.

[163] P. Kaiser, D. Berenson, N. Vahrenkamp, T. Asfour, R. Dillmann, and S.S. Srinivasa. Constellation - an algorithm for finding robot configurations that satisfy multiple constraints. In *IEEE International Conference on Robotics and Automation*, 2012.

[164] T. Niemueller, G. Lakemeyer, and S.S. Srinivasa. A generic robot database and its application in fault analysis and performance evaluation. In *IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2012.

[165] R. Paolini, A. Rodriguez, S.S. Srinivasa, and M.T. Mason. A data-driven statistical framework for post-grasp manipulation. In *International Symposium on Experimental Robotics*, 2012.

[166] K. Strabala, M.K. Lee, A. Dragan, J. Forlizzi, and S.S. Srinivasa. Learning the communication of intent prior to physical collaboration. In *IEEE International Symposium on Robot and Human Interactive Communication*, 2012.

[167] D. Berenson, T. Siméon, and S.S. Srinivasa. Addressing cost-space chasms in manipulation planning. In *IEEE International Conference on Robotics and Automation*, 2011.

[168] M. Cakmak, S.S. Srinivasa, M.K. Lee, J. Forlizzi, and S. Kiesler. Human preferences for robot-human hand-over configurations. In *IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2011.

[169] M. Cakmak, S.S. Srinivasa, M.K. Lee, S. Kiesler, and J. Forlizzi. Using spatial and temporal contrast for fluent robot-human hand-overs. In *ACM/IEEE International Conference on Human-Robot Interaction*, 2011.

[170] A. Collet, S.S. Srinivasa, and M. Hebert. Structure discovery in multi-modal data: A region-based approach. In *IEEE International Conference on Robotics and Automation*, 2011.

[171] M. Dogar and S.S. Srinivasa. A framework for push-grasping in clutter. In *Robotics: Science and Systems*, 2011.

[172] A.D. Dragan, G.J. Gordon, and S.S. Srinivasa. Learning from experience in manipulation planning: Setting the right goals. In *International Symposium on Robotics Research*, 2011.

[173] A.D. Dragan, N.D. Ratliff, and S.S. Srinivasa. Manipulation planning with goal sets using constrained trajectory optimization. In *IEEE International Conference on Robotics and Automation*, 2011.

[174] R. Knepper, S.S. Srinivasa, and M. Mason. An equivalence relation for local path sets. In *Workshop on the Algorithmic Foundations of Robotics*, 2011.

[175] M. Mason, S.S. Srinivasa, and A. Vazquez. Generality and simple hands. In *International Symposium on Robotics Research*, 2011.

[176] A. Rodriguez, M.T. Mason, S.S. Srinivasa, M. Bernstein, and A. Zirbel. Abort and retry in grasping. In *IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2011.

[177] D. Berenson and S.S. Srinivasa. Probabilistically complete planning with end-effector pose constraints. In *IEEE International Conference on Robotics and Automation*, 2010.

[178] L.Y. Chang, S.S. Srinivasa, and N.S. Pollard. Planning pre-grasp manipulation for transport tasks. In *IEEE International Conference on Robotics and Automation*, 2010. **Best Manipulation Paper Award Finalist**.

[179] A. Collet and S.S. Srinivasa. Efficient multi-view object recognition and full pose estimation. In *IEEE International Conference on Robotics and Automation*, 2010.

[180] M.R. Dogar and S.S. Srinivasa. Push-grasping with dexterous hands: Mechanics and a method. In *IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2010. **Best Conference Paper Award Finalist**.

[181] R.A. Knepper, S.S. Srinivasa, and M.T. Mason. Hierarchical planning architectures for mobile manipulation tasks in indoor environments. In *IEEE International Conference on Robotics and Automation*, 2010.

[182] M.K. Lee, S. Kiesler, J. Forlizzi, S.S. Srinivasa, and P. Rybski. Gracefully mitigating breakdowns in robotic services. In *ACM/IEEE International Conference on Human-Robot Interaction*, 2010. **Best Conference Paper Award Winner**.

[183] M. Martinez, A. Collet, and S.S. Srinivasa. MOPED: A scalable and low latency object recognition and pose estimation system. In *IEEE International Conference on Robotics and Automation*, 2010.

[184] A. Rodriguez, M.T. Mason, and S.S. Srinivasa. Manipulation capabilities with simple hands. In *International Symposium on Experimental Robotics*, 2010.

[185] A. Sorokin, D. Berenson, S.S. Srinivasa, and M. Hebert. People helping robots helping people: Crowdsourcing for grasping novel objects. In *IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2010.

[186] D. Berenson, J. Chestnutt, S.S. Srinivasa, J.J. Kuffner, and S. Kagami. Pose-constrained whole-body planning using task space region chains. In *IEEE-RAS International Conference on Humanoid Robots*, 2009.

[187] D. Berenson, S.S. Srinivasa, D. Ferguson, A. Collet, and J.J. Kuffner. Manipulation planning with workspace goal regions. In *IEEE International Conference on Robotics and Automation*, 2009.

[188] D. Berenson, S.S. Srinivasa, D. Ferguson, and J.J. Kuffner. Manipulation planning on constraint manifolds. In *IEEE International Conference on Robotics and Automation*, 2009.

[189] D. Berenson, S.S. Srinivasa, and J.J. Kuffner. Addressing pose uncertainty in manipulation planning using task space regions. In *IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2009.

[190] A. Collet, D. Berenson, S.S. Srinivasa, and D. Ferguson. Object recognition and full pose registration from a single image for robotic manipulation. In *IEEE International Conference on Robotics and Automation*, 2009. **Best Vision Paper Award Finalist**.

[191] G. Gallagher, S.S. Srinivasa, J.A. Bagnell, and D. Ferguson. GATMO: a generalized approach to tracking movable objects. In *IEEE International Conference on Robotics and Automation*, 2009.

[192] G. Hollinger, D. Ferguson, S.S. Srinivasa, and S. Singh. Combining search and action for mobile robots. In *IEEE International Conference on Robotics and Automation*, 2009.

[193] N. Ratliff, B. Ziebart, K. Peterson, J.A. Bagnell, M. Hebert, A.K. Dey, and S.S. Srinivasa. Inverse optimal heuristic control for imitation learning. In *International Conference on Artificial Intelligence and Statistics*, 2009.

[194] N. Ratliff, M. Zucker, J.A. Bagnell, and S.S. Srinivasa. CHOMP: Gradient optimization techniques for efficient motion planning. In *IEEE International Conference on Robotics and Automation*, 2009.

[195] B.D. Ziebart, N. Ratliff, G. Gallagher, C. Mertz, K. Peterson, J.A. Bagnell, M. Hebert, A.K. Dey, and S.S. Srinivasa. Planning-based prediction for pedestrians. In *IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2009.

[196] D. Berenson and S.S. Srinivasa. Grasp synthesis in cluttered environments for dexterous hands. In *IEEE-RAS International Conference on Humanoid Robots*, 2008.

[197] D.J. Dewey, M.P. Ashley-Rollman, M. De Rosa, S.C. Goldstein, T.C. Mowry, S.S. Srinivasa, P. Pillai, and J. Campbell. Generalizing metamodules to simplify planning in modular robotic systems. In *IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2008.

[198] R. Diankov, N. Ratliff, D. Ferguson, S.S. Srinivasa, and J. Kuffner. Bispace planning: Concurrent multi-space exploration. In *Robotics: Science and Systems*, 2008.

[199] R. Diankov, S.S. Srinivasa, D. Ferguson, and J. Kuffner. Manipulation planning with caging grasps. In *IEEE-RAS International Conference on Humanoid Robots*, 2008.

[200] S.S. Srinivasa, D. Ferguson, M.V. Weghe, R. Diankov, D. Berenson, C. Helfrich, and H. Strasdat. The robotic busboy: Steps towards developing a mobile robotic home assistant. In *International Conference on Intelligent Autonomous Systems*, 2008.

[201] S.O. Anderson and S.S. Srinivasa. Identifying trajectory classes in dynamic tasks. In *IEEE International Symposium on Approximate Dynamic Programming and Reinforcement Learning*, 2007.

[202] A. Deshpande, S.S. Srinivasa, and P. Pillai. Control strategies and design guidelines for planar latch-less metamorphic robots based on analysis of dynamics. In *IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2007.

[203] J.L. Fu, S.S. Srinivasa, N.S. Pollard, and B.C. Nabbe. Planar batting under shape, pose, and impact uncertainty. In *IEEE International Conference on Robotics and Automation*, 2007.

[204] N. Ratliff, J.A. Bagnell, and S.S. Srinivasa. Imitation learning for locomotion and manipulation. In *IEEE-RAS International Conference on Humanoid Robots*, 2007.

[205] M. Vandeweghe, D. Ferguson, and S.S. Srinivasa. Randomized path planning for redundant manipulators without inverse kinematics. In *IEEE-RAS International Conference on Humanoid Robots*, 2007.

[206] P. Bhat, J. Kuffner, S. Goldstein, and S.S. Srinivasa. Hierarchical motion planning for self-reconfigurable modular robots. In *IEEE International Conference on Robotics and Automation*, 2006.

[207] J. McCann, N.S. Pollard, and S.S. Srinivasa. Physics-based motion retiming. In *ACM SIGGRAPH/Eurographics Symposium on Computer Animation*, 2006.

[208] S.S. Srinivasa and D. Ferguson. Meet point planning for multirobot coordination. In *International Symposium on Robotics and Automation*, 2006.

[209] S.S. Srinivasa, M.A. Erdmann, and M.T. Mason. Control synthesis for dynamic contact manipulation. In *IEEE International Conference on Robotics and Automation*, 2005.

[210] S.S. Srinivasa, M.A. Erdmann, and M.T. Mason. Using projected dynamics to plan dynamic contact manipulation. In *IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2005.

[211] S.S. Srinivasa, M.A. Erdmann, and M.T. Mason. Bilateral time-scaling for control of task freedoms of a constrained nonholonomic system. In *IEEE International Conference on Robotics and Automation*, 2003.

[212] D. Latimer IV, S.S. Srinivasa, V. Lee-Shue, S. Sonne, H. Choset, and A. Hurst. Towards sensor based coverage with robot teams. In *IEEE International Conference on Robotics and Automation*, 2002.

[213] S.S. Srinivasa, C.R. Baker, E. Sacks, G.B. Reshko, M.T. Mason, and M.A. Erdmann. Experiments with nonholonomic manipulation. In *IEEE International Conference on Robotics and Automation*, 2002.

Reports and Theses

[214] B.A. Newman, R.M. Aronson, S.S. Srinivasa, K. Kitani, and H. Admoni. HARMONIC: A multimodal dataset of assistive human-robot collaboration. *The International Journal of Robotics Research (Data Paper)*, 41(1):3–11, 2022.

[215] C Mavrogiannis, K Balasubramanian, S. Poddar, A. Gandra, and S. S. Srinivasa. Topology-informed model predictive control for anticipatory collision avoidance on a ballbot. *CoRR*, abs/2109.05084, 2021.

[216] G. Lee, C. Mavrogiannis, and S.S. Srinivasa. Towards effective human-ai teams: The case of collaborative packing. In *AAAI Fall Symposium on Artificial Intelligence and Human-Robot Interaction*, 2019.

[217] S. S. Srinivasa, P. Lancaster, J. Michalove, M. Schmittle, C. Summers, M. Rockett, J. R. Smith, S. Choudhury, C. Mavrogiannis, and F. Sadeghi. MuSHR: A low-cost, open-source robotic racecar for education and research. *CoRR*, abs/1908.08031, 2019.

[218] T. Bhattacharjee, D. Gallenberger, D. Dubois, L. L'Écuyer-Lapiere, Y. Kim, A. Mandalika, R. Scalise, R. Qu, H. Song, E. Gordon, and S.S. Srinivasa. Autonomous robot feeding for upper-extremity mobility impaired people: Integrating sensing, perception, learning, motion planning, and robot control. In *Conference on Neural Information Processing Systems*, 2018. **Best Demo Award Winner**.

[219] B. Calli, A. Singh, J. Bruce, W. W. Aaron, K. Konolige, S.S. Srinivasa, P. Abbeel, and A.M. Dollar. Yale-CMU-Berkeley dataset for robotic manipulation research. *The International Journal of Robotics Research (Data Paper)*, 36(3):261–268, 2017.

[220] R. Holladay and S.S. Srinivasa. RoGuE: Robot gesture engine. In *AAAI Spring Symposium on Enabling Computing Research in Socially Intelligent Human-Robot Interaction: A Community-Driven Modular Research Platform*, 2016.

[221] J. Peters, J. Piater, R. Platt, and S.S. Srinivasa. Report from Dagstuhl Seminar 15411: Multimodal manipulation under uncertainty. *Dagstuhl Reports*, 5(10):1–18, 2016.

[222] E. Cha, A.D. Dragan, J. Forlizzi, and S.S. Srinivasa. Effects of speech on perceived capability. In *ACM/IEEE International Conference on Human-Robot Interaction Late Breaking Report*, 2014.

[223] E. Cha, A.D. Dragan, and S.S. Srinivasa. Pre-school childrens' first encounter with a robot. In *ACM/IEEE International Conference on Human-Robot Interaction Late Breaking Report*, 2014.

[224] G. Zeglin, A. Walsman, L. Herlant, Z. Zheng, Y. Guo, M.K. Koval, K. Lenzo, H. Tay, P. Velagapudi, K. Correll, and S.S. Srinivasa. HERB's Sure Thing: a rapid drama system for rehearsing and performing live robot theater. In *IEEE Workshop on Advanced Robotics and its Social Impacts*, 2014.

[225] E. Cha, A.D. Dragan, and S.S. Srinivasa. Effects of robot capability on user acceptance. In *ACM/IEEE International Conference on Human-Robot Interaction Late Breaking Report*, 2013.

[226] K.T. Lee, A.D. Dragan, and S.S. Srinivasa. Legible user input for intent prediction. In *ACM/IEEE International Conference on Human-Robot Interaction Late Breaking Report*, 2013.

[227] A.D. Dragan and S.S. Srinivasa. Assistive teleoperation: A new domain for interactive learning. In *AAAI Fall Symposium on Robots Learning Interactively from Human Teachers*, 2012.

[228] A.D. Dragan and S.S. Srinivasa. Assistive teleoperation for manipulation tasks. In *ACM/IEEE International Conference on Human-Robot Interaction Late Breaking Report*, 2012.

[229] S. Javdani, M. Klingensmith, D. Bagnell, N. Pollard, and S.S. Srinivasa. Efficient touch based localization through submodularity. Technical Report CMU-RI-TR-12-25, The Robotics Institute, Carnegie Mellon University, 2012.

[230] L. Lindzey, H. Choset, S.S. Srinivasa, and R.A. Knepper. Multirobot pushing — how many robots are sufficient? Technical Report CMU-RI-TR-12-15, The Robotics Institute, Carnegie Mellon University, 2012.

[231] A. Dragan and S.S. Srinivasa. Learning to provide better examples for our robots. In *Pioneers Workshop,ACM/IEEE International Conference on Human-Robot Interaction*, 2011.

[232] M.K. Lee, J. Forlizzi, S. Kiesler, M. Cakmak, and S.S. Srinivasa. Predictability or adaptivity?: Designing robot handoffs modeled from trained dogs and people. In *ACM/IEEE International Conference on Human-Robot Interaction Late Breaking Report*, 2011.

[233] V. Micelli, K. Strabala, and S.S. Srinivasa. Perception and control challenges for effective human-robot handoffs. In *Workshop on RGB-D: Advanced Reasoning with Depth Cameras, Robotics: Science and Systems*, 2011.

[234] M. Dogar, V. Hemrajani, D. Leeds, B. Kane, and S.S. Srinivasa. Proprioceptive localization for mobile manipulators. Technical Report CMU-RI-TR-10-05, The Robotics Institute, Carnegie Mellon University, 2010.

[235] M. Herrmann and S.S. Srinivasa. Exploiting passthrough information for multi-view object reconstruction with sparse and noisy laser data. Technical Report CMU-RI-TR-10-07, The Robotics Institute, Carnegie Mellon University, 2010.

[236] G. Hollinger, A. Kehagias, S. Singh, D. Ferguson, and S.S. Srinivasa. Anytime guaranteed search using spanning trees. Technical Report CMU-RI-TR-08-36, The Robotics Institute, Carnegie Mellon University, 2008.

[237] M.P. Ashley-Rollman, M. De Rosa, S.S. Srinivasa, P. Pillai, S.C. Goldstein, and J. Campbell. Declarative programming for modular robots. In *Workshop on Self-Reconfigurable Robots/Systems and Applications, IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2007.

[238] S.S. Srinivasa. *Control Synthesis for Dynamic Contact Manipulation*. PhD thesis, The Robotics Institute, Carnegie Mellon University, 2005.

[239] S.S. Srinivasa. Experiments with nonholonomic manipulation. Master's thesis, The Robotics Institute, Carnegie Mellon University, 2001.

[240] S.S. Srinivasa. Reverse engineering using the structured lighting technique. Btech thesis, Mechanical Engineering, Indian Institute of Technology Madras, 1999.

Seminars

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-
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 AAAI	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-; AAAI 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: *CPS: Synergy: Collaborative Research: Learning control sharing strategies for assistive cyber-physical systems*
PI, co-PI: Brenna Argall, Northwestern

National Science Foundation (#1409003) 2014-18
Robust Intelligence, Division of Information & Intelligent Systems (IIS) $358,737
Title: *RI: Medium: The Foundations of a Manipulation Repertoire*
Co-PI, PI: Matt Mason, Co-PI: Michael Erdmann, CMU

National Institute of Health R01 (#R01EB019335) 2014-17
Title: *A Formalism for Customizing and Training Intelligent Assistive Devices*
PI, co-PI: Brenna Argall, Northwestern

Office of Naval Research (#ONR BAA 13-0001) 2014-17
ONR Basic Research Challenges in the Science of Autonomy
Title: *Mental Simulation of Intentions for Collaborative Human-Robot Learning and Planning*
co-PI, PI: Andrea Thomaz, Georgia Tech.

Toyota 2013-2017
Toyota Motor Engineering & Manufacturing (TEMA)
Title: *Physics-based Intelligent Manipulation in Clutter*

PI

Defense Advanced Research Projects Agency 2015-16
Simplifying Complexity in Scientific Discovery (SIMPLEX)
Title: *An Architecture for Shared Autonomy via Optimal Control*
PI

Richard King Mellon Foundation 2016
Title: *Intelligent asisstive technology for individuals with physical disabilities*
PI

Office of Naval Research 2012-15
Young Investigator Award (ONR-YIP)
Title: *Enabling Advanced Autonomous Physical Manipulation Capabilities for Robots in Human-Robot Teams*
PI

Defense Advanced Research Projects Agency (#DARPA-BAA-12-39) 2012-15
Robotics Challenge Track A
Co-PI, PI: Tony Stenz, CMU

Intel 2012-14
Embedded Computing Science and Technology Center
Title: *Lifelong Learning in the Real World*
Joint PI with: Drew Bagnell, CMU

ABB Research Grant 2013-14
Title: *In-hand manipulation with a simple gripper*
co-PI, PI: Matt Mason, CMU

Research for Advanced Manufacturing in Pennsylvania (RAMP) 2013
Title: *Robotics-enhanced, Cost-effective Motion Test Equipment for Inertial MEMS Devices*
PI, co-PI: David Bourne, CMU. Industry Collaborator: Acutronic Inc.

National Science Foundation (#1208388, $ 150,456) 2012-13
National Robotics Initiative (NRI)
Title: *Addressing Clutter and Uncertainty for Robotic Manipulation in Human Environments*
PI, co-PI: Kevin Lynch, Northwestern

National Science Foundation (#1228906, $ 24,808) 2012-13
Robust Intelligence, Division of Information & Intelligent Systems (IIS)
Title: *EAGER: Building Intelligent Mobile Manipulators for Assistive Care*
Co-PI, PI: Matt Mason, CMU

National Science Foundation (#0916557, $ 515,079) 2009-13
Robust Intelligence, Division of Information & Intelligent Systems (IIS)
Title: *A Simple but General Hand*
Co-PI, PI: Matt Mason, CMU

National Science Foundation (#0540865, $ 16,105,954) 2006-16
Ret Supplements, Engineering Research Centers, Human Resources Development
Title: *Quality of Life Technology Engineering Research Center*
QoltBots Project Leader, PI: Takeo Kanade, CMU

Defense Advanced Research Projects Agency (#DARPA-BAA-10-28) 2010-11
Autonomous Robotic Manipulation Software Track (ARM-S)
Title: *REARM: Robust Extensible Autonomous Robotic Manipulation*
Co-PI, PI: SRI

National Science Foundation (#0646448, $ 99,785) 2009-12
Small Business Phase II , Division of Industrial Innovation & Partnerships (IIP)
Title: *Methodology for Applying Haptic Robotics to Agile Manufacturing*
Subcontractor, PI: William Townsend, Barrett Technologies

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