Prof. Siddhartha Srinivasa

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The Robotics Institute	FAX:	(412) 297 4110
Carnegie Mellon University	EMAIL:	siddh@cs.cmu.edu
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Employment

Finmeccanica Associate Professor in Computer Science — 2013-
Associate Professor — 2011-13
The Robotics Institute, Carnegie Mellon University

Senior Research Scientist — 2005-11
Intel Labs Pittsburgh

Education

Ph.D., Carnegie Mellon University — August 2005
Committee: Matthew Mason (advisor), Michael Erdmann (advisor),
Alfred Rizzi (CMU), Yan-bin Jia (Iowa State)
Thesis: *Control Synthesis for Dynamic Contact Manipulation*

Master of Science, Carnegie Mellon University — August 2001
Advisors: Matthew Mason, Michael Erdmann
Thesis: *Experiments with Nonholonomic Manipulation*

Bachelor of Technology, Indian Institute of Technology Madras — August 1999
Advisor: A. Radhakrishnan
Thesis: *Reverse Engineering using the Structured Lighting Technique*

Honors and Awards

- RSS Best Systems Paper Award Finalist [44], 2015
- IEEE ICRA Best Conference Paper Award Finalist [38], 2015
- IEEE ICRA Best Video Award Finalist [48], 2014
- Finmeccanica Chair in Computer Science 2013-16
- RSS Early Career Spotlight Award, 2013
- RSS Best Paper Award Finalist [62], 2013
- IEEE ICRA Best Manipulation Paper Award Finalist [63], 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 [70], 2012
- RSS Best Paper Award Finalist [69], 2012
- RAS Most Active Technical Committee Award: Mobile Manipulation, 2011
- ACM/IEEE HRI Best Paper Award Winner [89], 2010
- IEEE IROS Best Paper Award Finalist [87], 2010
- IEEE ICRA Best Manipulation Paper Award Finalist [85], 2010
- IEEE ICRA Best Vision Paper Award Finalist [97], 2009
- Intel Corporate Technology Group Divisional Recognition Awards, May, July, Oct 2008
- Intel Research Pittsburgh Lab Research Awards, January, July 2006, January 2007

Mentoring (The Robotics Institute, Carnegie Mellon University, unless otherwise noted)

Current Students

Chris Dellin	Ph.D.		Efficient Manipulation Task Planning via Reuse-Informed Optimization of Planning Effort	2009-
Shervin Javdani	Ph.D.	(+Drew Bagnell)	Learning Policies for Shared Autonomy	2011-
Michael Koval	Ph.D.	(+Nancy Pollard)	Robust Manipulation via Contact Sensing	2012-
Zita Marinho	Ph.D.	(+Geoff Gordon)	Moment-based Algorithms for Structured Prediction	2012-
Jennifer King	Ph.D.		Robust Rearrangement Planning using Nonprehensile Interaction	2012-
Matt Klingensmith	Ph.D.	(+Michael Kaess)	Articulated 3D SLAM	2013-
Laura Herlant	Ph.D.			2013-
Stefanos Nikolaidis	Ph.D.			2014-
Gilwoo Lee	Ph.D.	(+Matt Mason)		2015-
David Butterworth	M.S.			2015-
Shushman Choudhury	M.S.			2015-

Current Postdoctoral Fellows

Henny Admoni 2016-
Aaron Johnson 2015-
Pyry K. Matikainen 2014-

Current Staff

Jeongseok Lee 2016-
Clinton Liddick 2014-

Graduated

Anca Dragan, Ph.D. 2009-2015
Thesis: *Legible Robot Motion Planning* Now: Assistant Professor, Berkeley

Dmitry Berenson, Ph.D. (+James Kuffner) 2006-2011
Thesis: *Constrained Manipulation Planning* Now: Assistant Professor, WPI

Alvaro Collet, Ph.D. (+Martial Hebert) 2009-2012
Thesis: *Lifelong Robotic Object Perception* Now: Research Scientist, Microsoft

Mehmet Dogar, Ph.D. 2008-2013
Thesis: *A Framework for Manipulation in Cluttered Environments* Now: Assistant Professor, Leeds

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) 2009
Institute für Technik der Informationsverarbeiung, Universität Karlsruhe Now: TU Braunschweig
Thesis: *Active scene and object reconstruction for robotic manipulation from vision and laser*

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

Christopher Dellin, M.S. 2009-2012
Thesis: *Configuration Space Geometry of Multi-Object Manipulation* Now: Ph.D. CMU

Kyle Strabala, M.S. 2010-2012

Thesis: *Learning the Communication of Intent Prior to Physical Collaboration* Now: Scientist, Near Earth Autonomy

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

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

Evan Shapiro, M.S. 2013-15
Thesis: *A Hierarchical Framework for Configuration Space Task Planning* Now: Ph.D. GTech

Student Fellowships

Dmitry Berenson	Intel
Alvaro Collet	Caja Madrid
Mehmet Dogar	Fulbright
Elizabeth Cha	NSF
Anca Dragan	Gordon Bell, Siebel, Dan David, Intel, Google Anita Borg, HRI Pioneer
Garratt Gallagher	NSF
Laura Herlant	Hertz, NSF, HRI Pioneer
Shervin Javdani	NSF
Jennifer King	NASA
Michael Koval	NASA, NSF
Zita Marinho	CMU-Portugal
Stefanos Nikolaidis	Gordon Bell
Rachel Holladay	SRC-URO, CRA Outstanding Undergraduate Female Researcher Finalist

Graduate Interns

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

Kevin Zhang	Spring 2015-
Pengju Jin	Fall 2014-
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-
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

Breelyn Kane Styler	2011-
Mike Phillips	2011-15
Alberto Rodriguez	2007-13
Ross Knepper	2006-11
Nathan Ratliff	2004-09

Publications

Refereed Journals

[1] A. Johnson, J. King, and S.S. Srinivasa. Convergent planning. *IEEE Robotics and Automation Letters*, 2016.

[2] M. Klingensmith, S.S. Srinivasa, and M. Kaess. Articulated robot manipulator simultaneous localization and mapping (ARM-SLAM). *IEEE Robotics and Automation Letters*, 2016.

[3] 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.

[4] 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.

[5] 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.

[6] A.D. Dragan, R. Holladay, and S.S. Srinivasa. Deceptive robot motion: synthesis, analysis and experiments. *Autonomous Robots*, 39(3):331–345, 2015.

[7] 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.

[8] Anthony Stentz, Herman Herman, Alonzo Kelly, Eric Meyhofer, Galen Clark Haynes, David Stager, Brian Zajac, J. Andrew (Drew) Bagnell, Jordan Brindza, Christopher Dellin, Michael George, Jose Gonzalez-Mora, Sean Hyde, Morgan Jones, Michel Laverne, Maxim Likhachev, Levi Lister, Matthew D Powers, Oscar Ramos, Justin Ray, David P Rice, Justin Scheifflee, Raumi Sidki, S.S. Srinivasa, Kyle Strabala, Jean Philippe Tardif, Jean-Sebastien Valois, J Michael Vandeweghe, Michael D Wagner, and Carl Wellington. CHIMP, the CMU highly intelligent mobile platform. *Journal of Field Robotics*, 32(2):209–228, 2015.

[9] A.D. Dragan and S.S. Srinivasa. Integrating human observer inferences into robot motion planning. *Autonomous Robots*, 37(4):351–368, 2014.

[10] 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.

[11] M.R. Dogar, M.C. Koval, A. Tallavajhula, and S.S. Srinivasa. Object search by manipulation. *Autonomous Robots*, 36(1–2):153–167, 2013.

[12] 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.

[13] A.D. Dragan, K.T. Lee, and S.S. Srinivasa. Teleoperation with intelligent and customizable interfaces. *Journal of Human-Robot Interaction*, 1(3), 2013.

[14] 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**).

[15] 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.

[16] 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.

[17] 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**).

[18] 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.

[19] 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.

[20] S.S. Srinivasa, D. Berenson, M. Cakmak, A. Collet, M.R. Dogar, A.D. Dragan, R.A. Knepper, T. Niemueller, K. Strabala, and M. Vande Weghe. HERB 2.0: Lessons learned from developing a mobile manipulator for the home. *Proceedings of the IEEE*, 100(8):1–19, 2012.

[21] D. Berenson, 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.

[22] 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**).

[23] 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.

[24] 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.

[25] 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

[26] 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.

[27] 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.

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

[29] 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.

[30] 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.

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

[32] 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.

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

[34] 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.

[35] 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.

[36] 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.

[37] 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.

[38] 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.

[39] 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.

[40] 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.

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

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

[43] 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.

[44] 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.

[45] 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.

[46] 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.

[47] 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.

[48] 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.

[49] 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.

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

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

[52] 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.

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

[54] 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.

[55] 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.

[56] 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.

[57] 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.

[58] 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.

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

[60] 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.

[61] 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.

[62] A.D. Dragan and S.S. Srinivasa. Generating legible motion. In *Robotics: Science and Systems*, 2013.

[63] 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.

[64] 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.

[65] 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.

[66] 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.

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

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

[69] A.D. Dragan and S.S. Srinivasa. Formalizing assistive teleoperation. In *Robotics: Science and Systems*, 2012.

[70] A.D. Dragan and S.S. Srinivasa. Online customization of teleoperation interfaces. In *IEEE International Symposium on Robot and Human Interactive Communication*, 2012.

[71] 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.

[72] 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.

[73] 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.

[74] 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.

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

[76] 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.

[77] 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.

[78] 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.

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

[80] 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.

[81] 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.

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

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

[84] 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.

[85] 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**.

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

[87] 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.

[88] 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.

[89] 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.

[90] 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.

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

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[93] 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.

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Reports and Theses

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[134] 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.

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[141] S.S. Srinivasa. Reverse engineering using the structured lighting technique. Technical Report BTech thesis, Mechanical Engineering, Indian Institute of Technology Madras, 1999.

Selected Invited Talks

- *Feedback-driven Physics-based Manipulation*, RI Faculty Lunch at CMU, October 2015
- *Mathematical Models for Human Robot Interaction*, Seminar at Northwestern, September 2014
- *The Robot Drama Project: Algorithms and open-source tools to enable robot dramatic performance*, Plenary Keynote at IEEE Workshop on Advanced Robotics and its Social Impacts, September 2014
- *Feedback-driven Physics-based Manipulation*, Invited talk at RSS Workshop on Information-based Grasp and Manipulation Planning, July 2014
- *The Mathematics of Human Robot Interaction*, Colloquium at National University of Singapore, June 2014
- *State Estimation for Contact Manipulation with the Manifold Particle Filter*, Invited talk at ISRR, December 2013

- *The Mathematics of Human-Robot Interaction*, Invited talk at National University of Singapore, December 2013
- *The Mathematics of Human-Robot Interaction*, Early Career Spotlight talk at RSS, June 2013
- *Lifelong Robotic Object Perception and Manipulation*, Invited talk at RSS Workshop on Robots in Clutter and RGB-D Workshop, June 2013
- *The Mathematics of Human-Robot Interaction*, Invited talk at RSS Workshop on Learning from Demonstration, June 2013
- *A Framework for Reconfiguration Planning in Clutter*, Invited talk at RSS Workshop on Combined Robot Motion Planning and AI Planning for Practical Applications, June 2013
- *Lifelong Robotic Object Perception*, Invited talk at ICRA Workshop on Autonomous Learning, May 2013
- *Physics-based Manipulation*, Invited talk at AAAI Fall Symposium, October 2012
- *Result replication in robotics*, Invited talk at RSS Workshop - From theory to practice of performance comparison and result replications in Robotics, July 2012
- *Lifelong robotic object discovery*, Invited talk at RSS Workshop - RGB-D: Advanced Reasoning with Depth Cameras, July 2012
- *Enabling Mobile Manipulation in the Real World*, Invited talk at International Symposium on Robotics Research (ISRR), August 2011
- *Enabling Mobile Manipulation in the Real World*, GRASP Seminar, University of Pennsylvania, April 2011
- *Personal Robotics at Intel*, Computer Science Department Seminar, National Taiwan University, November 2010
- *Personal Robotics*, Keynote at Quality of Life Technologies Conference, September 2010
- *Personal Robotics at Intel*, Keynote at Shastra 2010, Indian Institute of Technology Madras, September 2010
- *Manipulation Planning*, Workshop on Mobile Manipulation, IEEE ICRA, Anchorage, May 2010
- *Personal Robotics*, Technology for Life and Living: Aging and Technology at the Cutting Edge, March 2010
- *Personal Robotics at Intel*, Computer Science Seminar, Indian Institute of Technology Madras, January 2010
- *MOPED: Fast, Scalable Object Recognition and Pose Registration*, Workshop on Semantic Perception for Mobile Manipulation, IEEE IROS, St. Louis, October 2009
- *Personal Robotics at Intel*, Workshop on Mobile Manipulation in Human Environments, Robotics: Systems and Science, Seattle, June 2009
- *Careers in Robotics*, Mars Area High School, February 2009
- *Personal Robotics: Progress and prospects*, PSO Tech Talk, Santa Clara, February 2009
- *Grasp Synthesis in Cluttered Environments for Dexterous Hands*, Workshop on Robot Manipulation: Intelligence in Human Environments, Robotics: Systems and Science, Zurich, June 2008
- *Personal Robotics: Enabling actuation in uncertain physical environments*, Intel Developer Forum Shanghai China, March 2008
- *Personal Robotics Research at Intel*, Plastic Surgery Grand Rounds, West Penn Hospital, Pittsburgh PA, June 2007
- *Control synthesis for dynamic contact manipulation*, Thesis Defense, Carnegie Mellon University, August 2005
- *Planning and control of dynamic contact manipulation*, Intel Research Pittsburgh Seminar, Intel Research Pittsburgh, May 2005
- *Planning and control of dynamic contact manipulation*, Center for the Foundations of Robotics, Carnegie Mellon University, February 2005
- *Dynamic contact manipulation with remote contacts*, Thesis Proposal, Carnegie Mellon University, December 2003
- *Intrinsic tactile sensing for mobile manipulation*, Center for the Foundations of Robotics, Carnegie Mellon University, August 2003
- *Bilateral time-scaling for control of task freedoms of a constrained nonholonomic system*, Manipulation Lab talk, Carnegie Mellon University, October 2002
- *Experiments with nonholonomic manipulation*, Institute of Information and Communication Technology (DA-IICT) Gandhinagar, May 2002
- *Observers for nonlinear systems*, Manipulation Lab talk, Carnegie Mellon University, March 2002
- *Overview of Research at the Manipulation Lab*, Indian Institute of Technology Madras, January 2001
- *Overview of Research at the Manipulation Lab*, Indian Institute of Science Bangalore, December 2000
- *The Mobipulator — Experiments with nonholonomic manipulation*, CIPMAS Seminar, The National University of Singapore, January 2001

Teaching

16-843 Manipulation Algorithms Fall 2012-
The Robotics Institute, Carnegie Mellon University
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-
The Robotics Institute, Carnegie Mellon University
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

Program Chair	Robotics: Science and Systems (RSS)	2017
Editor	International Journal of Robotics Research (IJRR)	2014-
Editor	IEEE/RSJ IROS	2014-
Editor	A Roadmap for U.S. Robotics: From Internet to Robotics	2013
Founding Program Chair	Robotics Track AAAI	2012-2013
Founding Chair	IEEE RAS Technical Committee on Mobile Manipulation	2010-2012
Senior Program Committee	AAAI	2012-2013
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
Area Chair	RSS	2011-2012
Associate Editor	IEEE/RSJ IROS	2011-2012
Associate Editor	IEEE ICRA	2010-2013
Panelist	NSF Robust Intelligence	2012

Organization

Presentations Chair	IEEE IROS	2014
Chair	IEEE ICRA Best Manipulation Paper Award Committee	2013
Publications Chair	RSS	2013
Short Presentations Chair	RSS	2012

Workshops Organized

Dagstuhl	Multimodal Manipulation Under Uncertainty	2015
IEEE ICRA	Benchmarking in Manipulation Research: The YCB Object and Model Set	2015
IEEE ICRA	Optimal Robot Motion Planning	2015
IEEE IROS	Rehabilitation and Assistive Robotics: Bridging the Gap Between Clinicians and Roboticists	2014
IEEE IROS	Robot Manipulation: What has been achieved and what remains to be done?	2014
HRI	Collaborative Manipulation	2013
RSS	Robots in Clutter: Manipulation, Perception and Navigation in Human Environments	2012
IEEE ICRA	Mobile Manipulation: Integrating Perception and Manipulation	2011
RSS	Strategies and Evaluation for Mobile Manipulation in Household Environments	2010
ICCV	Computer Vision for Humanoid Robots in Real Environments	2009

Selected Program Committees: International Conference on Human-Robot Interaction (HRI) 2012-; International Conference on Automated Planning and Scheduling (ICAPS) 2010; Robotics: Science and Systems (RSS) 2009-2010; Workshop on the Algorithmic Foundations of Robotics (WAFR) 2008, 2012-; AAAI Special Track on Physically Grounded AI 2009-2011, and numerous others.

University Service

Member	RI Curriculum Program Committee	2015-
Member	RI Faculty Hiring Committee	2015-
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

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

Office of Naval Research (#ONR N00014-16-R-BA01) 2016-19
Long Range Broad Agency Announcement (BAA) for Navy and Marine Corps Science and Technology
Title: *Enabling dexterous physics-based manipulation via a learning framework for shared autonomy*
PI

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

National Science Foundation (#1544797, $ 435,928) 2015-18
Cyber-Physical Systems (CPS)
Title: *CPS: Synergy: Collaborative Research: Learning control sharing strategies for assistive cyber-physical systems*
PI, co-PI: Brenna Argall, Northwestern

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

National Science Foundation (#1409003, $ 1,076,210) 2014-18
Robust Intelligence, Division of Information & Intelligent Systems (IIS)
Title: *RI: Medium: The Foundations of a Manipulation Repertoire*
Co-PI, PI: Matt Mason, Co-PI: Michael Erdmann, CMU

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

PI

Past

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

2015

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 Caregiving

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

- 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