

# Prof. Siddhartha Srinivasa (co-Principal Investigator)

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## (a) Professional Preparation

Bachelor of Technology, Mechanical Engineering, Indian Institute of Technology Madras	August 1999
Master of Science, Robotics, Carnegie Mellon University	August 2001
Doctor of Philosophy, Robotics, Carnegie Mellon University	August 2005

## (b) Appointments

Finmeccanica Associate Professor, The Robotics Institute, Carnegie Mellon University	2011-Present
Senior Research Scientist, Intel Labs Pittsburgh	2005-2011

## (c-i) Five Most Relevant Products

- [ 1 ] 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
- [ 2 ] 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
- [ 3 ] 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
- [ 4 ] 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
- [ 5 ] 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**)

## (c-ii) Five Other Significant Products

- [ 1 ] 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
- [ 2 ] 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
- [ 3 ] 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**)
- [ 4 ] 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
- [ 5 ] 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

## Honors and Awards

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**Best paper award finalist:** ACM/IEEE HRI 2010 (also winner), IEEE ICRA 2015, RSS 2013, IEEE ROMAN 2012, RSS 2012, IEEE IROS 2010. **Best manipulation paper award finalist:** IEEE ICRA 2013, IEEE ICRA 2010

- IEEE ICRA Best Video Award Finalist, 2014
- Finmeccanica Chair in Computer Science, 2013
- RSS Early Career Spotlight Award, 2013
- Okawa Foundation Research Award 2012
- Office of Naval Research Young Investigator Award, 2012
- RAS Most Active Technical Committee Award: Mobile Manipulation, 2011
- IEEE ICRA Best Vision Paper Award Finalist, 2009

## (d) Synergistic Activities

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- **Curricula:** Developed two new graduate level courses, in robotic manipulation and robot autonomy:  
**16-843 Manipulation Algorithms** Graduate-level course on the theory and algorithms that enable robots to physically manipulate their world including the geometry of manipulation configuration spaces, motion planning, synthesizing robust grasps for dexterous hands, reconfiguring clutter, and physics-based actions.  
**16-662 Robot Autonomy** Graduate-level course on manipulation, motion planning, perception, navigation, and machine learning algorithms for mobile manipulators with strong hands-on component where students implement their assignments and class projects on a real mobile manipulation platform.
- **Open-source Software and Hardware:** Barrett Technology “puck” motor controller; OWD, the Open WAM driver; COMPS, a constrained planning framework; MOPED, for object recognition and pose estimation; CHOMP, a gradient algorithm for trajectory optimization; and GATMO, for navigation among movable objects. The software is used by over 20 research groups around the world.
- **Chairs and Editorships:** Editor, International Journal of Robotics Research 2013-; Editor, IEEE/RSJ IROS 2014-; Founding Chair, IEEE Robotics and Automation Soc. Technical Committee on Mobile Manipulation 2010-12; Founding Program Chair, Robotics Track AAAI 2012-13; Area Chair, RSS 2012-13; Associate Editor, IEEE ICRA 2010-13; Associate Editor, IEEE/RSJ IROS 2011-12.
- **Workshops Organized:** IEEE ICRA 2015: Optimal Robot Motion Planning IEEE ICRA 2015: Benchmarking in Manipulation Research: The YCB Object and Model Set, IEEE IROS 2014: Rehabilitation and Assistive Robotics: Bridging the Gap Between Clinicians and Roboticians, IEEE IROS 2014: Robot Manipulation: What has been achieved and what remains to be done?, HRI 2013: Collaborative Manipulation: New Challenges for Robotics and HRI, and several others.
- **Selected Program Committees:** Human Robot Interaction 2012, 13, 14, 15; International Joint Conference on Artificial Intelligence (IJCAI) 2012; International Conference on Automated Planning and Scheduling (ICAPS) 2010; Robotics: Science and Systems (RSS) 2009, 10; AAAI Physically Grounded AI Track 2009, 11.

## (e) Collaborators & Other Affiliations (CMU unless otherwise noted)

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**Co-editors:** Oliver Brock (TU Berlin), Dov Katz, Kurt Konolige (Industrial Perception), Paul Newman (Oxford), Nick Roy (MIT), Andrea Thomaz (GTech). **Collaborators:** Allison Okamura (Stanford), Anca Dragan (Berkeley), Pieter Abbeel (Berkeley), Brenna Argall (Northwestern), Tim Barfoot (UToronto) Alvaro Collet (Microsoft); Dieter Fox (UW), Geoffrey Gordon, Martial Hebert, David Hsu (NUS), Andreas Krause (ETHZ), Alberto Rodriguez (MIT), Daniela Rus (MIT), Stefanie Tellex (Brown), Matthew Mason, Kevin Lynch (Northwestern), Brian Scassellati (Yale), Nicola Simeon (LAAS), Andrea Thomaz (GTech).

**Graduate Advisors:** Matthew Mason, Michael Erdmann.

**Thesis Advisor - total 21:** *PhD* : Dmitry Berenson, Alvaro Collet, Cristopher Dellin, Mehmet Dogar, Anca Dragan, Shervin Javdani, Jennifer King, Matt Klingensmith, Zita Marinho, Laura Herlant, Stefanos Nikolaidis, Gilwoo Lee. *MS* : Elizabeth Cha, Alvaro Collet, Garratt Gallagher, Martin Herrmann (KIT), Aaron Walsman, David Butterworth, Shushman Choudhury, Rosario Sclise, Shen Li.