

Koushil Sreenath

Education

- 2007–2011 **Ph.D. Electrical Engineering and Computer Science**, *The Univ. of Michigan*, Ann Arbor.
Thesis: Feedback Control of a Bipedal Walker and Runner with Compliance
Advisor: Jessy W. Grizzle
- 2011 **M.S. Applied Mathematics**, *The Univ. of Michigan*, Ann Arbor.
- 2004–2005 **M.S. Electrical Engineering**, *The Univ. of Texas*, Arlington.
Thesis: Adaptive Sampling using Mobile WSN
Advisor: Dan O. Popa, Frank L. Lewis
- 1998–2002 **B.E. Electronics & Communication**, *Visvesvaraya Technological University*, India.

Professional Experience

Academic

- 2013–Present **Asst. Professor**, *Mechanical Engineering*.
Asst. Professor, *Robotics Institute (Courtesy Appointment)*.
Asst. Professor, *Electrical and Computer Engineering (Courtesy Appointment)*.
Carnegie Mellon University, Pittsburgh
- 2011–2013 **Postdoctoral Research Fellow**, *Mechanical Engineering and Applied Mechanics, GRASP Lab, Univ. of Pennsylvania*, Philadelphia, with Vijay Kumar.
- 2007–2011 **Graduate Research Asst.**, *The Univ. of Michigan*, Ann Arbor, with Jessy W. Grizzle.
- 2004–2005 **Research Asst.**, *The Univ. of Texas*, Arlington, with Dan O. Popa, Frank L. Lewis.

Industry

- 2006–2007 **Research Engineer II**, *Intelligent Controls Group, Saint-Gobain R&D Center*, Northboro, MA.
- 2002–2004 **Asst. Systems Engineer**, *TATA Consultancy Services*, Chennai, India.

Awards

- 2016 **Congressional Robotics Caucus** in D.C - Invited to showcase research.
- 2015 **Google Faculty Research Award** in Robotics.
- 2015 **NSF CISE Research Initiation Initiative Award**.
- 2015 **Marquis Who's Who in America**.
- 2013–2014 **Donald L. and Rhonda Struminger Faculty Fellow** in Mechanical Engineering.
- 2013 **Best Paper Award**, Robotics: Science and Systems (RSS).
- 2012 **Travel Award**, IEEE International Conference on Robotics and Automation (ICRA).
- 2011 **Cover Article**, "Identification of a bipedal robot with a compliant drivetrain: Parameter estimation for control design," *IEEE Control System Magazine (CSM)*, vol. 31, no. 2.
- 2007–2011 **Doctoral Fellowship**, Dept. of Electrical Engineering and Computer Science, *The Univ. of Michigan*, Ann Arbor.
- Nov. 2010 **Technical Session Award**, Engineering Graduate Symposium, *The Univ. of Michigan*, Ann Arbor.
- Jun. 2006 **Best Paper Award**, IEEE International Conference on Robotics, Automation, and Mechatronics (RAM).

Teaching Experience

Carnegie Mellon University, Pittsburgh

- Fall 2016 **Mechanical Systems and Experimentation**, [ME 24-452].
- Spring 2016 **Nonlinear Control**, [ECE 18-776 / ME 24-776], (FCE Crse.: 4.64, Instr.: 4.80).
- Fall 2015 **Mechanical Systems and Experimentation**, [ME 24-452], (FCE Crse.: 4.2, Instr.: 4.49).
- Spring 2015 **Nonlinear Control**, [ECE 18-776 / ME 24-776], (FCE Crse.: 4.53, Instr.: 4.59).
- Fall 2014 **Mechanical Systems and Experimentation**, [ME 24-452], (FCE Crse.: 4.04, Instr.: 4.22).
Manipulation Algorithms, *Guest Lecture on Rotations* [RI 16-843].
- Fall 2013 **Nonlinear Control**, [ECE 18-776 / ME 24-776], (FCE Crse.: 4.43, Instr.: 4.48).
Manipulation Algorithms, *Guest Lecture on Rotations* [RI 16-843].

The Univ. of Pennsylvania, Philadelphia

- Spring 2013 **Advanced Robotics**, [MEAM 620], (Guest Lecturer).
- Fall 2012 **Independent Study - Linear Systems Theory**, [MEAM 899], (Co-Instructor).
- Spring 2012 **Advanced Robotics**, *Guest Lecture on Linear Quadratic Regulators (LQR)* [MEAM 620].

The Univ. of Michigan, Ann Arbor

- Fall 2010 **Linear Systems Theory**, [EECS 560], (Graduate Student Instructor).
106 graduate students, Instructor: Jessy W. Grizzle.

The Univ. of Texas, Arlington

- Spring 2005 **Control System Design**, [EE 5320], (Graduate Teaching Asst.).
50 graduate/undergraduate students, Instructor: Frank L. Lewis, Jyotirmay Gadewadikar.
- Fall 2004 **Circuit Analysis**, [EE 2315], (Graduate Teaching Asst.).
30 undergraduate students, Instructor: Adrian Fung.

Student Advising

Current Students

Ph.D. Students

- Sp. 2014 - Guofan Wu - [J4, J6], [K1] [C2, C4, C11, C15, C18, C21, C22]
Awards: Bertucci Fellowship 2016.
- Fall 2014 - Quan Nguyen - [J2], [K1], [C1, C6, C8, C10, C13, C14, C16, C17, C19], [A2, A6]
Awards: ACC best presentation of session 2016; ACC Travel Award 2015; GSA/Provost Conference Funding 2015.
- Fall 2014 - Avinash Siravuru - [J5], [C12], [A5]
- Fall 2014 - Katie Poggensee (co-supervised with Steve Collins) - [A3, A4]
Awards: NSF Graduate Fellowship 2015; Clare Boothe Luce Fellowship 2014.

Masters Students

- Fall 2015 - Xuning Yang (RI - co-supervised with Nathan Michael) - [J3], [C5]
- Fall 2015 - Ayush Agrawal - [J1, J3], [C1, C3]
- Fall 2015 - Prasanth Koatru - [C2, C4]
- Fall 2015 - Henry Hung - [C9]
- Fall 2015 - Ryan Edmonson
- Fall 2015 - Victor Yan

Bachelors Students

- Fall 2016 - Allan Wang

Graduated Students

Masters Students

- 2016 Roberto Shu, M.S. (RI) - [C12], [A5]

Next: Ph.D. with Ralph Hollis at Carnegie Mellon Univ.

Awards: GSA/Provost Conference Funding.

2016 Prashanth Krishnan, M.S. (MechE).

Next: Mathworks.

2016 Rohan Thakker, MRSD (RI).

Next: NASA JPL.

2016 Nikhil Baheti MRSD (RI).

2015 Suresh Ramasamy, M.S. (MechE) - [C22]

Next: Ph.D. with Ross Hatton at Oregon State Univ.

2013 Guofan Wu, M.S. (MechE) - [C22]

Next: Ph.D. at Carnegie Mellon University.

Bachelors Students

2016 Brian Bittner, B.S. (MechE) - [C7]

Next: Ph.D. with Shai Revzen and Jessy Grizzle at Univ. of Michigan, Ann Arbor.

Awards: Summer Undergraduate Research Fellowship (SURF) Summer 2014.

2016 Richard Lee, B.S. (MechE, co-supervised with Sebastian Scherer) - [R1]

Next: M.S. at Univ. of California, Berkley.

2015 Chang-Hyun Mungai, B.S. (MechE)

Awards: Summer Undergraduate Research Grant (SURF) Spring 2015.

2015 Gianfranco Colombi, B.S. (MechE)

Awards: Summer Undergraduate Research Grant (SURF) Spring 2015.

Funding

Summary

Total funds raised: \$4.5m.

Total funding allocated to K. Sreenath: \$1.4m.

Awarded as PI

2017-2019 Pennsylvania Infrastructure Technology Alliance - “*High-Speed Micro-Aerial Transportation through Cluttered Environments*” (*Funds:* \$140k.)

2015-2018 National Science Foundation CMMI #1538869 – “*Geometric Control for Dynamic Aerial Manipulation and Transportation*”. (*Funds:* \$356k.)

2015-2018 National Science Foundation IIS #1526515 - “*NRI: Collaborative Research: Unified Feedback Control and Mechanical Design for Robotic, Prosthetic, and Exoskeleton Locomotion*”. (*Total Funds:* \$1.8m. *My Share:* \$485k.)

2015-2017 National Science Foundation IIS #1464337 – “*CRII: RI: Dynamic Multi-robot Coordination and Cooperation using Dynamically Stable Mobile Robots*”. (*Funds:* \$168k.)

2015-2016 Google Faculty Research Award. (*Funds:* \$71k.)

2014-2016 National Science Foundation IIS #1451327 – “*Workshop: Locomotion and Manipulation: Why the Great Divide?*”. (*Funds:* \$50k.)

2014 CIT Research Equipment Grant. (*Funds:* \$75k.)

Awarded as co-PI

2016-2018 Pennsylvania Infrastructure Technology Alliance (*Total Funds:* \$150k.)

2016-2017 Autel Robotics (*Total Funds:* \$1.5m. *My Share:* \$100k.)

2016-2017 Mohamed Bin Zayed International Robotics Challenge (*Total Funds:* \$140k.)

Publications

Legend: Underlined authors are supervised students.

Books

- [B1] K. Sreenath, M. F. Mysorewala, D. O. Popa, and F. L. Lewis, *Adaptive Sampling with Mobile WSN: Simultaneous robot localisation & mapping of parametric spatio-temporal fields*, ser. Control Engineering Series. IET, February 2011
ISBN 978-1-84919-257-6.

Journals (Published and In Review)

- [J1] A. Agrawal, O. Harib, A. Hereid, S. Finet, M. Masselin, L. Praly, A. D. Ames, K. Sreenath, and J. W. Grizzle, “First steps towards translating HZD control of bipedal robots to decentralized control of exoskeletons,” *IEEE Access*, in review, 2017.
- [J2] Q. Nguyen and K. Sreenath, “Optimal robust safety-critical control for dynamic robotics,” *International Journal of Robotics Research (IJRR)*, in review, 2016.
- [J3] X. Yang, A. Agrawal, K. Sreenath, and N. Michael, “System-agnostic adaptive teleoperation for high-dimensional systems,” *special issue on Learning for Human-Robot Collaboration, Autonomous Robotics*, in review, 2016.
- [J4] G. Wu and K. Sreenath, “Safety-critical geometric control for systems on manifolds subject to time-varying constraints,” *IEEE Transactions on Automatic Control (TAC)*, in review, 2016.
- [J5] A. Siravuru, S. P. Viswanathan, K. Sreenath, and A. K. Sanyal, “The reaction mass biped: Geometric mechanics and control,” *Journal of Intelligent and Robotic Systems (JINT)*, to appear, 2017.
- [J6] G. Wu and K. Sreenath, “Variation-based linearization of nonlinear systems evolving on $SO(3)$ and S^2 ,” *IEEE Access*, vol. 3, pp. 1592–1604, September 2015.
- [J7] K. Galloway, K. Sreenath, A. D. Ames, and J. W. Grizzle, “Torque saturation in bipedal robotic walking through control lyapunov function based quadratic programs,” *IEEE Access*, vol. 3, pp. 323–332, April 2015.
- [J8] J. Thomas, G. Loianno, J. Polin, K. Sreenath, and V. Kumar, “Toward autonomous avian-inspired dynamic grasping and perching,” *Bioinspiration & Biomimetics*, vol. 9, no. 2, pp. 025 010–025 024, June 2014.
- [J9] A. D. Ames, K. Galloway, K. Sreenath, and J. W. Grizzle, “Rapidly exponentially stabilizing control lyapunov functions and hybrid zero dynamics,” *IEEE Transactions on Automatic Control (TAC)*, vol. 59, no. 4, pp. 876–891, April 2014.
- [J10] K. Sreenath, H.-W. Park, I. Poulakakis, and J. W. Grizzle, “Embedding active force control within the compliant hybrid zero dynamics to achieve stable, fast running on MABEL,” *The International Journal of Robotics Research (IJRR)*, vol. 32, no. 3, pp. 324–345, March 2013.
- [J11] K. Sreenath, H.-W. Park, I. Poulakakis, and J. W. Grizzle, “Compliant hybrid zero dynamics controller for achieving stable, efficient and fast bipedal walking on MABEL,” *The International Journal of Robotics Research (IJRR)*, vol. 30, no. 9, pp. 1170–1193, August 2011.
- [J12] H.-W. Park, K. Sreenath, J. Hurst, and J. W. Grizzle, “Identification of a bipedal robot with a compliant drivetrain: Parameter estimation for control design,” *IEEE Control Systems Magazine (CSM)*, vol. 31, no. 2, pp. 63–88, April 2011
This paper was the cover article on IEEE CSM, April 2011 issue..
- [J13] K. Sreenath, V. Giordano, and F. L. Lewis, “Avoiding shared resource conflicts in mobile sensor networks with multiple missions,” *IET Control Theory & Applications (CTA)*, vol. 1, no. 3, pp. 665–674, May 2007.
- [J14] K. Sreenath, F. L. Lewis, and D. O. Popa, “Simultaneous adaptive localization of a wireless sensor network,” *ACM SIGMOBILE Mobile Computing and Communications Review (M2CR)*, vol. 11, no. 2, pp. 14–28, April 2007.

Journal Preprints to be Submitted

- [K1] Q. Nguyen, G. Wu, and K. Sreenath, “Exponential and finite-time control barrier functions,” *IEEE Transactions on Automatic Control (TAC)*, to be submitted, January 2017.

Conference Proceedings (Fully Peer-Reviewed Prior to Publication)

- [C1] Q. Nguyen, X. Da, W. Martin, H. Geyer, J. W. Grizzle, and K. Sreenath, “Dynamic walking on randomly-varying discrete terrain with one-step preview,” in *Robotics: Science and Systems (RSS)*, in review, 2017.
- [C2] P. Kotaru, G. Wu, and K. Sreenath, “Differential-flatness and control of multiple quadrotors with a payload suspended through flexible cables,” in *Robotics: Science and Systems (RSS)*, in review, 2017.
- [C3] A. Agrawal and K. Sreenath, “Discrete control barrier functions for safety-critical control of discrete systems with application to bipedal robot navigation,” in *Robotics: Science and Systems (RSS)*, in review, 2017.
- [C4] P. Kotaru, G. Wu, and K. Sreenath, “Dynamics and control of a quadrotor with a payload suspended through an elastic cable,” in *American Control Conference (ACC)*, to appear, 2017.
- [C5] X. Yang, K. Sreenath, and N. Michael, “A framework for efficient teleoperation via online adaptation,” in *IEEE International Conference on Robotics and Automation (ICRA)*, to appear, 2017.
- [C6] Q. Nguyen, X. Da, J. W. Grizzle, and K. Sreenath, “Dynamic walking on stepping stones with gait library and control barrier,” in *Workshop on Algorithmic Foundations of Robotics (WAFR)*, 2016.
- [C7] B. Bittner and K. Sreenath, “Symbolic computation of dynamics on smooth manifolds,” in *Workshop on Algorithmic Foundations of Robotics (WAFR)*, 2016.
- [C8] Q. Nguyen, A. Hereid, J. W. Grizzle, A. D. Ames, and K. Sreenath, “3d dynamic walking on stepping stones with control barrier functions,” in *IEEE International Conference on Decision and Control (CDC)*, Las Vegas, NV, December 2016, pp. 827–834.
- [C9] H. Hung, N. Sood, and K. Sreenath, “Determining minimum and maximum number of agents required for planar cable-suspended aerial manipulation,” in *ASME Dynamics Systems and Control Conference (DSCC)*, Minneapolis, MN, October 2016.
- [C10] Q. Nguyen and K. Sreenath, “Optimal robust time-varying safety-critical control with application to dynamic walking on moving stepping stones,” in *ASME Dynamics Systems and Control Conference (DSCC)*, Minneapolis, MN, October 2016.
- [C11] G. Wu and K. Sreenath, “Safety-critical control of a 3d quadrotor with range-limited sensing,” in *ASME Dynamics Systems and Control Conference (DSCC)*, Minneapolis, MN, October 2016.
- [C12] R. Shu, A. Siravuru, A. Rai, T. Dear, K. Sreenath, and H. Choset, “Optimal control for geometric motion planning of a robot diver,” in *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Daejeon, Korea, October 2016, pp. 4780–4785.
- [C13] Q. Nguyen and K. Sreenath, “Exponential control barrier functions for enforcing high relative-degree safety-critical constraints,” in *American Control Conference (ACC)*, Boston, MA, July 2016, pp. 322–328.
- [C14] Q. Nguyen and K. Sreenath, “Optimal robust control for constrained nonlinear hybrid systems with application to bipedal locomotion,” in *American Control Conference (ACC)*, Boston, MA, July 2016, pp. 4807–4813.
- [C15] G. Wu and K. Sreenath, “Safety-critical control of a planar quadrotor,” in *American Control Conference (ACC)*, Boston, MA, July 2016, pp. 2252–2258.
- [C16] Q. Nguyen and K. Sreenath, “Safety-critical control for dynamical bipedal walking with precise footstep placement,” in *IFAC Analysis and Design of Hybrid Systems (ADHS)*, Atlanta, GA, October 2015.

- [C17] Q. Nguyen and K. Sreenath, “Optimal robust control for bipedal robots through control lyapunov function based quadratic programs,” in *Robotics: Science and Systems (RSS)*, Rome, Italy, July 2015.
- [C18] G. Wu and K. Sreenath, “Safety-critical and constrained geometric control synthesis using control lyapunov and control barrier functions for systems evolving on manifolds,” in *American Control Conference (ACC)*, Chicago, IL, July 2015, pp. 2038–2044.
- [C19] Q. Nguyen and K. Sreenath, “L1 adaptive control for bipedal robots with control lyapunov function based quadratic programs,” in *American Control Conference (ACC)*, Chicago, IL, July 2015, pp. 862–867.
- [C20] K. Sreenath and A. K. Sanyal, “The reaction mass biped: Equations of motion, hybrid model for walking and trajectory tracking control,” in *IEEE International Conference on Robotics and Automation (ICRA)*, Seattle, WA, May 2015, pp. 5741–5746.
- [C21] G. Wu and K. Sreenath, “Geometric control of quadrotors transporting a rigid-body load,” in *IEEE Conference on Decision and Control (CDC)*, Los Angeles, CA, December 2014, pp. 6141–6148.
- [C22] S. Ramasamy, G. Wu, and K. Sreenath, “Dynamically feasible motion planning through partial differential flatness,” in *Robotics: Science and Systems (RSS)*, Berkeley, CA, July 2014.
- [C23] J. Thomas, G. Loianno, K. Sreenath, and V. Kumar, “Toward image based visual servoing for aerial grasping and perching,” in *IEEE International Conference on Robotics and Automation (ICRA)*, 2014.
- [C24] T. Lee, K. Sreenath, and V. Kumar, “Geometric control of cooperating multiple quadrotor UAVs with a suspended payload,” in *IEEE Conference on Decision and Control (CDC)*, Florence, Italy, December 2013, pp. 5510–5515.
- [C25] K. Sreenath, T. Lee, and V. Kumar, “Geometric control and differential flatness of a quadrotor UAV with a cable-suspended load,” in *IEEE Conference on Decision and Control (CDC)*, Florence, Italy, December 2013, pp. 2269–2274.
- [C26] K. Sreenath and V. Kumar, “Dynamics, control and planning for cooperative manipulation of payloads suspended by cables from multiple quadrotor robots,” in *Robotics: Science and Systems (RSS)*, 2013
- This paper won the RSS Best Paper Award 2013*
- [C27] J. Thomas, J. Polin, K. Sreenath, and V. Kumar, “Avian-inspired grasping for quadrotor micro uavs,” in *ASME International Design Engineering Technical Conference (IDETC)*, Portland, OR, August 2013.
- [C28] K. Sreenath, N. Michael, and V. Kumar, “Trajectory generation and control of a quadrotor with a cable-suspended load – a differentially-flat hybrid system,” in *IEEE International Conference on Robotics and Automation (ICRA)*, 2013.
- [C29] K. Sreenath, C. R. Hill, and V. Kumar, “A partially observable hybrid system model for bipedal locomotion for adapting to terrain variations,” in *Hybrid Systems: Computation and Control (HSCC)*, Philadelphia, PA, April 2013, pp. 137–142.
- [C30] S. Kim, K. Sreenath, S. Bhattacharya, and V. Kumar, “Optimal trajectory generation under homology class constraints,” in *IEEE Conference on Decision and Control (CDC)*, Maui, HI, December 2012, pp. 3157–3164.
- [C31] S. Kim, K. Sreenath, S. Bhattacharya, and V. Kumar, “Trajectory planning for systems with homotopy class constraints,” in *Latest Advances in Robot Kinematics (ARK)*. Innsbruck, Austria: Springer, Netherlands, June 2012, pp. 83–90.

- [C32] H.-W. Park, K. Sreenath, A. Ramezani, and J. W. Grizzle, “Switching control design for accommodating large step-down disturbances in bipedal robot walking,” in *IEEE International Conference on Robotics and Automation (ICRA)*, Saint Paul, MN, May 2012, pp. 45–50.
- [C33] K. Sreenath, H.-W. Park, and J. W. Grizzle, “Design and experimental implementation of a compliant hybrid zero dynamics controller with active force control for running on MABEL,” in *IEEE International Conference on Robotics and Automation (ICRA)*, Saint Paul, MN, May 2012, pp. 51–56.
- [C34] K. Sreenath, H.-W. Park, I. Poulakakis, and J. W. Grizzle, “Design and experimental implementation of a compliant hybrid zero dynamics controller for walking on MABEL,” in *IEEE Conference on Decision and Control (CDC)*, Atlanta, GA, USA, December 2010, pp. 280–287.
- [C35] J. Koncsol, H.-W. Park, and K. Sreenath, “Real world issues with real-time control of MABEL: A platform for experimental control of bipedal locomotion,” in *IEEE-RAS International Conference on Humanoid Robots (Humanoids)*, Nashville, TN, USA, December 2010, pp. 659–664.
- [C36] J. W. Grizzle, J. Hurst, B. Morris, H.-W. Park, and K. Sreenath, “MABEL, a new robotic bipedal walker and runner,” in *American Control Conference (ACC)*, St. Louis, MO, USA, June 2009, pp. 2030–2036.
- [C37] P. Ballal, F. L. Lewis, J. Mireles, Jr., and K. Sreenath, “Deadlock avoidance for free choice multi-reentrant flow lines: Critical siphons & critical subsystems,” in *IEEE Mediterranean Conference on Control and Automation (MED)*, Athens, Greece, June 2007, pp. 1–8.
- [C38] K. Sreenath, F. L. Lewis, and D. O. Popa, “Localization of a wireless sensor network with unattended ground sensors and some mobile robots,” in *IEEE International Conference on Robotics, Automation, and Mechatronics (RAM)*, Bangkok, Thailand, December 2006, pp. 1–8

This paper won the IEEE RAM Conf. Best Paper Award 2006

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- [C39] D. O. Popa, K. Sreenath, and F. L. Lewis, “Robotic deployment for environmental sampling applications,” in *IEEE International Conference on Control and Automation (ICCA)*, vol. 1, Budapest, Hungary, June 2005, pp. 197–202.

Published Abstracts

- [A1] X. Yang, K. Sreenath, and Nathan, “Online adaptive teleoperation via incremental intent modeling,” in *Late Breaking Report, ACM/IEEE International Conference on Human-Robot Interaction (HRI)*, to appear, 2017.
- [A2] Q. Nguyen and K. Sreenath, “Dynamic bipedal walking over time-varying stepping stones,” in *Dynamic Walking Conference (DW)*, Michigan, June 2016.
- [A3] K. Poggensee, K. Sreenath, and S. H. Collins, “Methods to improve system identification in a human-exoskeleton,” in *Dynamic Walking Conference (DW)*, Michigan, June 2016.
- [A4] K. Poggensee, K. Sreenath, and S. H. Collins, “Identifying the dynamics of a human-exoskeleton system,” in *Dynamic Walking Conference (DW)*, Ohio State University, July 2015.
- [A5] R. Shu, A. Siravuru, and K. Sreenath, “An active damping leg for safe landing from a free fall,” in *Dynamic Walking (DW)*, Ohio State University, July 2015.
- [A6] Q. Nguyen and K. Sreenath, “Dynamic bipedal walking while carrying an unknown time-varying load,” in *Dynamic Walking (DW)*, Ohio State University, July 2015.
- [A7] K. Sreenath, H.-W. Park, I. Poulakakis, and J. W. Grizzle, “Hybrid zero dynamics based control design for efficient walking,” in *Dynamic Walking Conference (DW)*, MIT, July 2010.
- [A8] H.-W. Park, K. Sreenath, J. Hurst, and J. W. Grizzle, “System identification and modeling for mabel, a bipedal robot with a cable-differential-based compliant drivetrain,” in *Dynamic Walking Conference (DW)*, MIT, July 2010.

Theses

- [T1] K. Sreenath, “Feedback control of a bipedal walker and runner with compliance,” Ph.D. dissertation, The University of Michigan, Ann Arbor, MI, August 2011.
- [T2] K. Sreenath, “Adaptive sampling using mobile WSN,” Master’s thesis, University of Texas at Arlington, Arlington, TX, USA, December 2005.

Invention Disclosures

- [I1] K. Sreenath, X.-D. He, Y. Jiang, and W. Gleason, “Fully integrated automated test apparatus for measuring material conductivity under controlled atmosphere,” Invention Disclosure, Saint-Gobain Northboro R&D Center, April 2006.

Technical Reports

- [R1] R. Lee, K. Sreenath, and S. Scherer, “Modeling and control of coaxial uav with swashplate controlled lower propeller,” Robotics Institute, Carnegie Mellon University, Pittsburgh, PA, Tech. Rep. CMU-RI-TR-16-33, June 2016.
- [R2] H.-W. Park, K. Sreenath, J. W. Hurst, and J. W. Grizzle, “Identification and dynamic model of a bipedal robot with a cable-differential-based compliant drivetrain,” University of Michigan Control Group, Tech. Rep. CGR 10-06, 2010.
- [R3] K. Sreenath, “Multiple sample seebeck and resistivity test automation,” Saint-Gobain Northboro R&D Center, Northboro, MA, USA, Tech. Rep. TM-2006-991, 2006.
- [R4] K. Sreenath, “Furnace control automation,” Saint-Gobain Northboro R&D Center, Northboro, MA, USA, Tech. Rep. TM-2006-1078, 2006.
- [R5] K. Sreenath and X.-D. He, “Design and implementation of data acquisition hardware and interface for the controlled oxygen SOFC test station system,” Saint-Gobain Northboro R&D Center, Northboro, MA, USA, Tech. Rep. TM-2006-937, 2006.

Invited Talks

- [S1] K. Sreenath, “Robust agility and safety for dynamic aerial manipulation and legged locomotion,” Mechanical Engineering & Mechanics Departmental Seminar, Lehigh University, November 2016.
- [S2] K. Sreenath, “Robust agility and safety for dynamic aerial manipulation and legged locomotion,” Institute for Robotics & Intelligent Machines (IRIM) Seminar Series, Georgia Tech, October 2016.
- [S3] K. Sreenath, “Feedback control for robust constrained dynamic bipedal locomotionfeedback control for robust constrained dynamic bipedal locomotion,” Mechanical and Aerospace Engineering Seminar Series, Syracuse University, February 2016.
- [S4] K. Sreenath, “Nonlinear feedback for robust constrained dynamic bipedal walking,” Invited Seminar at Indian Institute of Science (IISc), December 2015.
- [S5] K. Sreenath, “Aerial robotics for dynamic load manipulation and transportation,” Invited Seminar at Indian Institute of Information Technology, Hyderabad (IIIT-H), December 2015.
- [S6] Q. Nguyen and K. Sreenath, “Dynamic bipedal walking while carrying an unknown time-varying load,” Invited Speaker at the Dynamic Walking Conference, July 2015.
- [S7] K. Sreenath, “Aerial load transportation in the 2020s – a glimpse into the future,” Invited Speaker at the JASONS, June 2015.
- [S8] K. Sreenath, “Dynamic aerial manipulation in birds-of-prey and aerial robots,” Invited Speaker at International Symposium on Adaptive Motions in Animals and Machines, MIT, June 2015.
- [S9] K. Sreenath, “Control lyapunov function based quadratic programs for torque saturated bipedal walking,” Workshop on Dynamic Locomotion, Robotics: Science and Systems, July 2014.

- [S10] K. Sreenath, “Feedback control for achieving dynamic aerial manipulation,” Electrical and Computer Engineering Seminar Series, Carnegie Mellon University, November 2013.
- [S11] K. Sreenath, “Nonlinear geometric control for highly dynamic legged locomotion and aerial manipulation,” Robotics Institute Seminar, Carnegie Mellon University, October 2013.
- [S12] K. Sreenath, “Highly dynamic legged locomotion and aerial manipulation,” IEEE Smart Tech Metro Area Workshop, September 2013.
- [S13] K. Sreenath, “Abstractions for dynamic walking,” Workshop on Robot Design and Control: Advanced Robot Motion, Robotics: Science and Systems, July 2013.
- [S14] K. Sreenath, “Avian inspired grasping for quadrotor mavs,” Workshop on Aerial Mobile Manipulation, Robotics: Science and Systems, July 2013.
- [S15] K. Sreenath, “Highly-dynamic legged locomotion through nonlinear control,” Mechanical Engineering Graduate Seminar, George Washington University, April 2013.
- [S16] K. Sreenath, “Abstractions and control policies for agility,” Carnegie Mellon University, March 2013.
- [S17] K. Sreenath, “Feedback control for achieving walking and running on a biped with compliance,” IIT Bombay, Mumbai, March 2012.
- [S18] K. Sreenath, “Feedback control of a bipedal robot with compliance,” IIT Madras, Chennai, March 2012.
- [S19] K. Sreenath, “Legged Robotics - Machines that Run,” BITS Pilani, Hyderabad, February 2012.
- [S20] K. Sreenath, “Control design for achieving walking and running on a compliant bipedal robot,” IIT Hyderabad, February 2012.
- [S21] K. Sreenath, “Achieving running on a bipedal robot with compliance,” EECS Graduate Seminar, Univ. of Toledo, October 2011.
- [S22] K. Sreenath, “Achieving walking and running on a biped with compliance: A feedback control design,” GRASP Special Seminar, GRASP Lab, Univ. of Pennsylvania, June 2011.
- [S23] K. Sreenath, “Feedback control of a compliant bipedal walker and runner,” CSAIL, MIT, April 2011.
- [S24] K. Sreenath, “Towards achieving running on MABEL,” Biomimetic Robotics Lab, MIT, April 2011.
- [S25] J. W. Grizzle, H.-W. Park, and K. Sreenath, “Modeling, feedback control and experimental results for MABEL, a planar bipedal robot,” Control Seminar Series, The University of Michigan, Ann Arbor, September 2010 (*The second graduate student speaker in last 4 years.*).
- [S26] K. Sreenath, “Legged robots - An Introduction,” BITS Pilani, Hyderabad, December 2008.
- [S27] K. Sreenath and M. F. Mysorewala, “Adaptive sampling algorithms for field estimation using mobile robotic sensors,” ARRI Tech Fest, September 2005.

Professional Activities

Editorial Service

- 2017 Area Chair, Robotics: Science and Systems (RSS).
- 2017 Assoc. Editor for Indian Control Conference (ICC).
- 2016-2017 Assoc. Editor for American Control Conference (ACC).
- 2016 Assoc. Editor for IEEE-CSS International Conference on Decision and Control (CDC).
- 2015-2016 Assoc. Editor for IEEE-RAS International Conference on Humanoid Robots (Humanoids).
- 2016 Chief Respondent, Workshop on Algorithmic Foundations of Robotics (WAFR).

2015 Program Committee Member, Robotics: Science and Systems (RSS).

Workshop and Conference Session Organization

Jul. 2016 Invited session on Legged Locomotion at American Control Conference.

Apr. 2015 NSF Workshop on Locomotion and Manipulation - Why the great divide? www.locomanip-greatdivide.org

Jul. 2014 RSS Workshop on Dynamic Locomotion - www.cmu.edu/me/hdr/dynamiclocomotion

Conference Session Chair

Dec. 2016 Chair for regular session on Mechanical Systems at IEEE Conference on Decision and Control (CDC).

Jul. 2016 Co-Chair for invited session on Legged Locomotion at American Control Conference (ACC).

Oct. 2015 Co-Chair for regular session on Robotics at IFAC Conference on Analysis and Design of Hybrid Systems (ADHS).

Jul. 2015 Co-Chair for regular session on Nonlinear Systems at American Control Conference (ACC).

Book Reviewer

- Springer, 2015.

Journal Reviewer

- IEEE Transactions on Automatic Control, 2012-2015
- International Journal of Robotics Research, 2014, 2013
- IEEE Transactions on Robotics, 2010, 2014-2015
- Nonlinear Analysis: Hybrid Systems Journal, 2016
- Journal of Autonomous Robotics, 2016, 2014, 2013, 2011
- Journal of Artificial Intelligence, 2014
- ASME Journal of Mechanics and Robotics, 2014, 2013
- ASME Journal of Dynamic Systems, Measurement and Control, 2012
- IEEE Transactions on Mechatronics, 2014, 2012
- IEEE Transactions on Neural Networks, 2012
- IEEE Robotics and Automation Magazine, 2012
- Robotica, 2012, 2014-2015
- Advanced Robots, 2014
- IET Control Theory and Applications, 2015
- Chaos: An Interdisciplinary Journal of Nonlinear Science, 2010
- International Journal of Humanoid Robotics, 2011
- Journal of Intelligent and Robotic Systems, 2010
- Journal of Aerospace Engineering, 2014
- Simulation Modelling Practice and Theory, 2010
- Intelligent Industrial Systems, 2015

Conference Reviewer

- IEEE Conference on Decision and Control, 2012-2016
- American Control Conference, 2013-2015
- Robotics: Science & Systems, 2014-2015
- IEEE International Conference on Robotics and Automation, 2010-2015
- IEEE/RSJ International Conference on Intelligent Robots and Systems, 2012-2016
- IEEE Multi-Conference on Systems and Control, 2016, 2010
- ACM/IEEE International Conference on Human-Robot Interaction, 2013
- IEEE-RAS International Conference on Humanoid Robots, 2016, 2014

- International Conference on Advanced Robotics, 2015

Grant Reviewer

National Science Foundation, 2016, 2015, 2014, 2013.

- 1 Robust Intelligence (RI) panel, CISE Directorate.
- 2 National Robotics Initiative (NRI) Panels, CISE Directorate.
- 1 Cyber-Physical Systems (CPS) panel, CISE Directorate.

Service on CMU Committees

- Undergraduate Education Committee, 2016-Present.
- Faculty search committee for robotics and control in 2013-Present.
- Graduate Education Committee and PhD Committee, 2013-2016.
- Strategic planning for PhD in Mechanical Engineering, 2013.

Society Membership

- Member, Tau Beta Pi – The Engineering Honor Society (since 2005).
- Member, Eta Kappa Nu – Epsilon Mu Chapter (since 2005).
- Member, IEEE (since 2000).
- Member, IEEE Control Systems Society (since 2011).
- Member, IEEE Robotics and Automation Society (since 2012).
- Member, mensa.

Ph.D. Committee Member

Shichao Yang, supervised by Sebastian Scherer.

Micah Corah, supervised by Nathan Michael.

Onder Erin, supervised by Metin Sitti.

Wei Jing, supervised by Kenji Shimada.

Tony Dear, supervised by Howie Choset.

Vishnu Desaraju, supervised by Nathan Michael.

Albert Wu, supervised by Hartmut Geyer.

Chaohui Gong, supervised by Howie Choset.

Nipun Popli, supervised by Maria Ilic.

Ph.D. 2016 Justin Thomas, supervised by Vijay Kumar at Univ. of Pennsylvania.

Ph.D. 2016 Wei Sin Ang, supervised by Hartmut Geyer.

Ph.D. 2016 Juanjuan Zhang, supervised by Steve Collins.

Ph.D. 2016 Erdnic Tatar, supervised by Gary Fedder and Tamal Mukherjee.

Ph.D. 2016 Siyuan Feng, supervised by Chris Atkeson.

Ph.D. 2015 Myunghee Kim, supervised by Steve Collins.

Ph.D. 2015 Jiuguang Wang, supervised by Chris Atkeson.

Ph.D. 2015 Mike Burkholder, supervised by Shawn Lister.

Current and Recent Collaborators

TAMU	Aaron Ames	Lehigh	Subhrajit Bhattacharya
Michigan	Jessy W. Grizzle	OSU	Jonathan Hurst
Penn	Vijay Kumar	UIUC	Hae-Won Park
Delaware	Ioannis Poulakakis	GWU	Taeyoung Lee
Syracuse	Amit K. Sanyal		

Media

Museum Exhibits

Jan. 2014 MABEL on exhibit at the Chicago Field Museum.

Television

Sep. 2011 CNN, ESPN, FOX 2 News, all aired in the US.

Aug. 2011 TV 5 News, aired in India.

Mar. 2011 The Discovery Channel, aired in Canada.

Printed Press

Sep. 2011 ISTOÉ magazine, Brazil, Kommersant Science magazine, Russia.

Jun. 2010 Chicago Tribune, The Detroit News, The Michigan Daily.

Online

Mar. 2013 Huffington Post, Discovery News, New Scientist, Gizmodo, Phys.org

Aug. 2011 Engadget, Gizmodo, Slashdot, Wired UK, Popular Science, IEEE Spectrum, The Atlantic, MSNBC

May 2010 Engadget, Fast Company, AnnArbor.com, Michigan Record Update, Robotics Technology Center.