

## KRISTI A. MORGANSEN

Associate Professor

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### PROFESSIONAL PREPARATION

#### Harvard University, Cambridge, MA

Doctor of Philosophy, Engineering Sciences, 1999

Master of Science, Applied Mathematics, 1996

#### Boston University, Boston, MA,

Master of Science, Mechanical Engineering, 1994

Bachelor of Science, Mechanical Engineering (summa cum laude), 1993

### EMPLOYMENT HISTORY

#### University of Washington, Seattle, WA

Associate Professor, Department of Aeronautics & Astronautics 2009-present

Adjunct Associate Professor, Department of Electrical Engineering 2009-present

Assistant Professor, Department of Aeronautics & Astronautics 2002-2009

Adjunct Assistant Professor, Department of Electrical Engineering 2002-2009

#### California Institute of Technology, Pasadena, CA

Senior Research Fellow, Control and Dynamical Systems and Mechanical Engineering 2001-2002

Postdoctoral Scholar, Control and Dynamical Systems and Mechanical Engineering 1999-2001

Course Lecturer, Control and Dynamical Systems 2000

#### Harvard University, Cambridge, MA

Graduate Research Assistant, Division of Engineering and Applied Sciences 1994-1999

#### Oak Ridge National Laboratory, Oak Ridge, TN

Graduate Research Assistant summers 1993, 1994, 1995

#### Boston University, Boston, MA

Graduate Research Assistant, Aerospace and Mechanical Engineering 1993-1994

### AWARDS

O. Hugo Schuck Award for best paper in the theory category for the 2009 *American Control Conference*.

Senior Member, 2006, Institute of Electrical and Electronic Engineers.

National Science Foundation CAREER Award, 2003-2009, National Science Foundation.

Clare Boothe Luce Assistant Professor of Engineering, 2002-2007, The Luce Foundation.

### JOURNAL PUBLICATIONS (PAST THREE YEARS)

1. B. T. Hinson and **K. A. Morgansen**, "Observability-based guidance for range-only and bearing-only Navigation," *IEEE Transactions on Robotics*, submitted, October 2014.
2. B. T. Hinson and **K. A. Morgansen**, "Gyroscopic sensing in the wings of the hawkmoth *Manduca sexta*: The role of sensor location and directional sensitivity," *Bioinspiration & Biomimetics*, submitted, December 2014.
3. A. Alaeddini and **K. A. Morgansen**, "Bio-inspired navigation for a nonholonomic mobile robot," *Journal of Aerospace Information Systems*, special issue, accepted for publication, October 2014.
4. B. T. Hinson and **K. A. Morgansen**, "Observability-based optimal sensor placement for flapping airfoil wake," *AIAA Journal of Guidance, Control and Dynamics*, **37**(5):1477-1486, 2014. doi: <http://arc.aiaa.org/doi/abs/10.2514/1.G000460>
5. F. van Breugel, **K. A. Morgansen** and M. Dickinson, "Monocular distance estimation from optic flow during active landing maneuvers," *Bioinspiration & Biomimetics*, special issue, **9**(2):025002 (9 pages), 2014.
6. J. Dyrh, T. L. Daniel, N. Cowan and **K. A. Morgansen**, "Flexible strategies for flight control: An active role for the abdomen," *Journal of Experimental Biology*, **216**(9):1523-1536, 2013.
7. E. Lalish and **K. A. Morgansen**, "Distributed reactive collision avoidance," *Autonomous Robots*, special issue, **32**(3):207-226, 2012.
8. C. Woodruff, L. Vu, **K. A. Morgansen** and D. Tomlin, "Deterministic modeling and evaluation of decision-making dynamics in sequential two-alternative forced choice tasks," *Proceedings of the IEEE, special issue on Interaction Dynamics: The Interface of Humans and Smart Machines*, **100**(3):734-750, March 2012.

### CONFERENCE PUBLICATIONS (REFEREED, PAST THREE YEARS)

1. B. T. Hinson, N. D. Powel, J. Quenzer and **K. A. Morgansen**, “Observability-based guidance algorithm for navigation using a single ranging beacon,” in *Robotics: Systems and Science*, July 2014.
2. A. Alaeddini and K. A. Morgansen, “Trajectory design for a nonlinear system to insure observability,” in *Proceedings of the European Control Conference*, June 2014.
3. J. Quenzer and **K. A. Morgansen**, “Observability based path planning in range-only underwater vehicle localization,” in *Proceedings of the American Control Conference*, June 2014.
4. B. T. Hinson, E. Rombokas, J. P. Dyhr, T. L. Daniel and **K. A. Morgansen**, “Sensing from control: Airframe deformation for simultaneous actuation and state estimation,” in *Conference on Decision and Control*, December 2013.
5. A. Alaeddini and **K. A. Morgansen**, “Autonomous state estimation using optic flow sensing,” in *Proceedings of the American Control Conference*, June 2013.
6. B. L. Boardman, T. L. Hedrick, D. H. Theriault, N. W. Fuller, M. Betke and **K. A. Morgansen**, “Collision avoidance in biological systems using collision cones,” in *Proceedings of the American Control Conference*, June 2013.
7. B. T. Hinson and **K. A. Morgansen**, “Observability optimization for the nonholonomic integrator,” in *Proceedings of the American Control Conference*, June 2013.
8. B. T. Hinson, M. K. Binder, and **K. A. Morgansen**, “Path planning to optimize observability in a planar uniform flow field,” in *Proceedings of the American Control Conference*, June 2013.
9. J. Dyhr, D. Colmanares, N. Cowan, T. Daniel, and **K. A. Morgansen**, “Autostabilizing airframe articulation: Animal inspired air vehicle control,” in *IEEE Conference on Decision and Control*, December 2012.
10. A. Demir, J. P. Dyhr, M. Mert Ankarali, **K. A. Morgansen**, T. L. Daniel and N. J. Cowan, “Inertial redirection of thrust forces via a flexible airframe,” in *Conference on Climbing and Walking Robots*, March 2012.
11. N. D. Powel and **K. A. Morgansen**, “Multiserver queueing for supervisory control of autonomous vehicles,” in *Proceedings of the American Control Conference*, June 2012.
12. B. Hinson and **K. A. Morgansen**, “Flowfield estimation in the wake of a pitching and heaving airfoil,” in *Proceedings of the American Control Conference*, June 2012.

### PROFESSIONAL SOCIETY SERVICE (PAST THREE YEARS)

*American Control Conf.*, Vice Chair for Invited Sessions (2017), *IEEE Conf. Decision and Control*, Finance co-chair (2016), *American Control Conf.*, Vice Chair for Special Sessions (2016), IEEE Control Systems Society, O. Hugo Shuck Award Selection Committee, Chair (2014-2015), *IEEE Trans. Control System Tech.*, Associate Editor (2014-present), *IEEE Int. Conf. Robotics & Automation*, Local Arrangements Chair (2015), IEEE Control System Society Board of Governors (2012-2014), *American Control Conf.*, Program Committee (2013), *Robotics Science & Systems*, Program Committee (2012), *American Control Conf.*, Publications Chair (2012)

### COLLABORATORS (PAST 48 MONTHS)

J. Baillieul (BU), C. Belta (BU), M. Betke (BU), N. Cowan (JHU), T. Daniel (UW), M. Dickinson (UW), D. Fox (UW), T. Hedrick (UNCCH), T. Horiuchi (UMD), J. S. Humbert (UMD), T. Kunz (BU), I. Paschalidis (BU), J. Vagners (UW), J. Vance (C. Charleston), S. Webster (APL-UW), C. Woolsey (VA Tech).

### GRADUATE AND POST-GRADUATE ADVISORS AND ADVISEES:

**Graduate and post-graduate advisors** to Kristi A. Morgansen

**Ph.D.:** Prof. Roger Brockett, Harvard University;

**Postgraduate:** Prof. Joel Burdick, Caltech and Prof. Richard Murray, Caltech.

### Graduate students advised:

**Past:** E. Anderson (MS AA), J. Becker (MS AA), P. Bettale (MS EE), B. Boardman (MS AA), S. Cantrell (MS EE), J. Hwang (MS AA), D. J. Klein (PhD AA), K. Krogh (MS AA), E. Lalish (PhD AA), B. Massey (MS AA), C. Matlack (MS EE), A. Melander (MS AA), K. Mushambi (MS AA), R. Svac (MS AA), B. I. Triplett (PhD AA).

**Current:** A. Alaeddini (PhD AA), T. Avant (MS AA), N. Brace (PhD AA), J. Calderon (PhD AA), C. Deacon (MS AA), B. Hinson (PhD AA), A. Jenkins (MS AA), N. Powel (PhD AA), J. Quenzer (MS AA).

### Postgraduate scholars advised:

**Past:** Dr. Christopher Lum (UW), Dr. Anawat Pongpunwattana (L3 Communications), Dr. Linh Vu (FPT Research Institute), Dr. Laszlo Techy (Hood Technologies).

**Current:** Dr. Eatai Roth.