

Raghvendra V. Cowlagi — Curriculum Vitae

BACKGROUND

1. Education

Ph.D., Aerospace Engineering	Georgia Institute of Technology, Atlanta, GA	2011
M.Tech., Aerospace Engineering	Indian Institute of Technology Bombay, Mumbai, India	2005
B.E., Electronics Engineering	University of Mumbai, India	2003

2. Work Experience

Assistant Professor	Department of Mechanical Engineering, WPI	2013 –
Guidance, Navigation, and Controls Engineer	Aurora Flight Sciences Corp., Cambridge, MA	2012 – 13
Postdoctoral Fellow	Massachusetts Institute of Technology, Cambridge, MA	2011 – 12
Research Assistant	Georgia Institute of Technology, Atlanta, GA	2006 – 11
Project Engineer	Indian Institute of Technology Bombay, Mumbai, India	2005 – 06
Teaching Assistant	Indian Institute of Technology Bombay, Mumbai, India	2003 – 05

TEACHING

3. Teaching Experience

Assistant Professor	Department of Mechanical Engineering, WPI	2013 –
Teaching Assistant	Indian Institute of Technology Bombay, Mumbai, India	2003 – 05

4. Teaching Innovations at WPI

- Introduced a novel scheme of take-home experimental kits to supplement the classroom material:
 - Acquired low-cost components including programmable Arduino microcontrollers, sensors, and connectors and packaged these components into kits for students to take home and conduct prescribed experiments.
 - Integrated these experiments with classroom discussion and homework assignments; provided students with hands-on experience without lab space requirements and /or separate lab component to the course.
 - Recorded an overwhelmingly positive student response after first implementation in *AE 4733*, A-term 2015 (see survey results in Appendix A). Implementations in other courses (*AE/ME 3703* in D-term 2016 and *AE 4723* in A-term 2016) are being planned (in coordination with other course instructors, as applicable).
- Redesigned the senior-level course *AE 4733, Guidance, Navigation, and Communications*:
 - Updated the course curriculum to include contemporary topics, e.g. Global Positioning System.

- Introduced take-home experimental kits in A-2015 offering.
- Developed a course project assignment.
- Developed self-contained, typewritten course notes.
- New graduate courses as part of the Aerospace Engineering graduate program:
 - *AE/ME 5222 Optimal Control of Dynamical Systems*: first offering in C-term 2015 had 17 students from AE, ME, RBE, ECE, and MA; next offering will also be available online.
 - *AE/ME 5224 Air Vehicle Dynamics and Control*: first offering in C-2016; will be a Core course in the *Dynamics & Control* area of study in the AE graduate program; also available online.
- Restructured the senior-level course *AE 4723, Aircraft Dynamics and Control*:
 - Introduced topics on modern aircraft control, which are listed in the catalog description of the course, but were omitted in the previous four offerings of the course (evidence: lecture notes, slides, assignments, and exams of the previous four offerings, and also verbal discussions with the previous course instructors).
 - Aligned course material with *AE 4733*, which covers some introductory material required for this course, and is completed by a majority of the students before taking this course.

5. Courses Taught at WPI

- AE 4733: Guidance, Navigation, and Communications (undergraduate)
- AE 4723: Aircraft Dynamics and Control (undergraduate)
- AE/ME 3703: Introduction to Control of Dynamical Systems (undergraduate)
- AE 5222: Optimal Control of Dynamical Systems (graduate)
- AE 5224: Air Vehicle Dynamics and Control (graduate, blended online/on-campus)

WPI Student Course Evaluation Report Data

Data for the following questions on the WPI student course evaluation form are provided:

Q.1 Overall rating of the quality of the course.

Q.2 Overall rating of the instructor's teaching.

- AE 4733: Guidance, Navigation, and Communications

Term offered	# Enrolled	Mean Q.1 rating	Mean Q.2 rating	# Responses
A-term 2013 ^(Note)	40	3.74	3.86	32
A-term 2014	48	4.30	4.53	43
A-term 2015	45	4.18	4.26	38

Note: Cross-listed as AE/ME 4733; data are for both sections combined.

- AE 4723: Aircraft Dynamics and Control

Term offered	# Enrolled	Mean Q.1 rating	Mean Q.2 rating	# Responses
B-term 2015	31	4.38	4.58	26

- AE 5222: Optimal Control of Dynamical Systems

Term offered	# Enrolled	Mean Q.1 rating	Mean Q.2 rating	# Responses
C-term 2015 ^(Note)	17	4.69	5.00	13

Note: Cross-listed as AE/ME 5222; data are for both sections combined.

- AE 5224: Air Vehicle Dynamics and Control

Term offered	# Enrolled	Mean Q.1 rating	Mean Q.2 rating	# Responses
C-term 2016 ^(Note)	23	4.29	4.57	14

Note: Cross-listed as AE/ME 5224, with online and on-campus sections for each; data are for all four sections combined.

- AE/ME 3703: Introduction to Control of Dynamical Systems

Term offered	# Enrolled	Mean Q.1 rating	Mean Q.2 rating	# Responses
B-term 2013 ^(Note)	43	3.38	3.88	35

Note: Cross-listed as AE/ME 3703; data are for both sections combined.

6. Undergraduate Projects Advised at WPI

6a. Major Qualifying Projects

Project Title	Students and co-advisors (italicized)	Year
Autonomous Quadrotor Navigation and Guidance ^(Note 1)	Jonathan Blythe, Krzysztof Borowicz, Alyssa Hollander	2015-16
Heterogeneous Network of Autonomous Vehicles	Binxin Liu, David Moore, Dylan Shields, <i>Prof. Michael A. Demetriou</i>	2015-16
Active Control for Helicopter Sling Load Stabilization ^(Note 2)	Joseph Sperry, Dusty Cyr, Radu Morar, <i>Prof. David J. Olinger</i>	2014-15
Passive Control for Helicopter Sling Load Stabilization	James Hitchen, Peter Guarino, Wesley Morawiec, <i>Prof. David J. Olinger</i>	2014-15
Autonomy Package for Unmanned Aerial Vehicles ^(Note 3)	Sam Friedman, Cy Ketchum, Kevin Hancock	2014-15
Helicopter Landing Platform	Travis Austin, Gabriel Diaz, Zhaolong Li, <i>Prof. Michael A. Demetriou</i>	2013-14

Note 1: Winner of 2nd prize, Team Category, 2016 AIAA Region 1 Student Conference, April 22-23, Worcester, MA.

Note 2: Winner of the Provost MQP Award in Aerospace Engineering, 2014-15. This MQP resulted in a conference paper published and presented at the AIAA SciTech 2016 conference, San Diego, CA.

Note 3: Winner of the Aerospace Engineering MQP award, 2014-15.

7. Graduate Theses and Dissertations Advised at WPI

7a. Ph.D. Dissertations in Progress

- Ruixiang Du (ME)
 - *Start date:* September 2015. *Expected completion date:* April 2019.
 - *Dissertation research area:* Autonomous navigation and guidance for agile aircraft in cluttered and contested 3D environments.
- Jie Fang (ME)
 - *Start date:* September 2015. *Expected completion date:* April 2019.
 - *Dissertation research area:* Decentralized control of a network of autonomous aircraft to satisfy global temporal logic specifications.
- Benjamin S. Cooper (AE)
 - *Start date:* January 2015. *Expected completion date:* December 2018.
 - *Dissertation research area:* Autonomous navigation and guidance for aircraft in uncertain environments with spatiotemporally evolving threats.
- Zetian Zhang (AE)
 - *Start date:* September 2013. *Expected completion date:* April 2017.
 - *Dissertation research area:* Control of vehicles with nonholonomic kinematic constraints to satisfy linear temporal logic constraints; control of multiple vehicle under such constraints.

7b. M.S. Thesis in Progress

- Thanacha Choopojcharoen (AE)
 - *Start date:* May 2015. *Expected completion date:* April 2016.
 - *Dissertation research area:* Control of vehicles with nonholonomic kinematic constraints to satisfy infeasible linear temporal logic specifications with minimum violations.

8. Independent Studies Conducted at WPI

8a. Directed Research — Graduate

- Jighjigh Tersoo-Ivase (ME, M.S. student, Fall 2013 - Spring 2016)
 - *Research topic:* Helicopter sling load stabilization using active control surfaces, including experimental validation of modeling assumptions and results; design of a test stand for validating a helicopter model via tethered flight tests.
- Joseph P. Sperry (AE, B.S./M.S. student, Fall 2015 and Spring 2016)
 - *Research topic:* Unifying artificial intelligence and control theory in route-planning for autonomous aerial vehicles.
 - *Notes:* 1 conference paper co-authored and presented by the student at the 2016 AIAA Guidance, Navigation, and Control Conference, San Diego, CA. 1 journal article in preparation for submission to the AIAA Journal of Guidance, Control, and Dynamics by May 2016.
- James I. Hitchen (AE, B.S./M.S student, Fall 2015 and Spring 2016)
 - *Research topic:* Flight tests for validating helicopter sling load stabilization designs; follow-on work from an MQP involving this student in 2014-15.

- *Notes*: 1 conference paper co-authored and presented by the student at the *AIAA SciTech 2016* conference, San Diego, CA.
- Zhaolong Liu (ME, M.S student, Spring 2014)
 - *Research topic*: Vehicle trajectory optimization using the half-car dynamical model.
- Payam Razavi (ME, M.S student, Fall 2013 and Spring 2014)
 - *Research topic*: Literature review on motion-planning subject to temporal logic constraints.

8b. Summer Undergraduate Research Fellowship

- Joseph P. Sperry (AE, Summer 2014)
 - *Research topic*: Trajectory tracking for an autonomous aircraft in an urban environment using sonar sensors (collaborative summer project with Prof. Robert White at Tufts University).

9. Academic Advising at WPI

Currently 21 advisees.

10. Honors and Awards Related to Teaching

- 2016 AIAA Region 1 Student Conference, 2nd Prize in Team Category (as advisor): For the MQP titled “*Autonomous Quadrotor Navigation and Guidance.*”
- 2014-15 Provost MQP Award in Aerospace Engineering (as co-advisor): For the project titled “*Active Control for Helicopter Sling Load Stabilization,*” co-advised with Prof. David J. Olinger (AE).
- 2014-15 Aerospace Engineering MQP Award (as advisor): For the project titled “*Autonomy Package for Unmanned Aerial Vehicles.*”

SCHOLARSHIP

Note: Publications with students at WPI are indicated below by highlighting the names of students.

11. Publications

11a. Publications in Peer-Reviewed Journals

8. R. V. Cowlagi. Hierarchical trajectory optimization in hybrid dynamical systems. *Automatica*, 2016. in review.
7. R. V. Cowlagi and Z. Zhang. Route guidance for satisfying temporal logic specifications on aircraft motion. *Journal of Guidance, Control, and Dynamics*, special issue *Computational Guidance & Control* 2016. in revision.
6. R. V. Cowlagi and J. H Saleh. Coordinability and consistency: Application of systems theory in accident prevention and system safety. *Journal of Loss Prevention in the Process Industries*, 33:200–212, January 2015.
5. R. V. Cowlagi and P. Tsiotras. Curvature-bounded traversability analysis for motion planning of mobile robots. *IEEE Transactions on Robotics*, 30(4):1011–1019, 2014.

4. R. V. Cowlagi and J. H. Saleh. Coordinability and consistency in accident causation and prevention: Formal system-theoretic concepts for safety in multilevel systems. *Risk Analysis*, 33(3):420–433, 2013.
3. R. V. Cowlagi and P. Tsiotras. Multi-resolution motion planning for autonomous agents via wavelet-based cell decompositions. *IEEE Transactions on Systems, Man and Cybernetics: Part B - Cybernetics*, 42(5):1455–1469, 2012.
2. R. V. Cowlagi and P. Tsiotras. Hierarchical motion planning with dynamical feasibility guarantees for mobile robotic vehicles. *IEEE Transactions on Robotics*, 28(2):379 – 395, 2012.
1. J. H. Saleh, K. Marais, E. Bakolas, and R. V. Cowlagi. Highlights from the literature on accident causation and system safety: Review of major ideas, recent contributions, and challenges. *Reliability Engineering and System Safety*, 95(11):1105–1116, 2011.

11b. Publications in Peer-Reviewed Conference Proceedings

21. T. Choopojcharoen and R. V. Cowlagi. Motion planning with minimal violation of linear temporal logic specifications for a nonholonomic vehicle kinematic model. In *Proceedings of the 55th IEEE Conference on Decision & Control*, Las Vegas, NV, USA, 2016. in review.
20. Z. Zhang and R. V. Cowlagi. Motion-planning with global temporal logic specifications for multiple nonholonomic robotic vehicles. In *Proceedings of the 2016 American Control Conference*, Boston, MA, USA, 2016. to appear.
19. R. V. Cowlagi and Z. Zhang. Motion-planning with temporal logic specifications for a nonholonomic vehicle kinematic model. In *Proceedings of the 2016 American Control Conference*, Boston, MA, USA, 2016. to appear.
18. R. V. Cowlagi and J. P. Sperry. Unifying artificial intelligence and trajectory optimization for UAV guidance. In *Proceedings of the Guidance, Navigation, and Control Conference, AIAA Scitech 2016*, number AIAA-2016-0381, San Diego, CA, USA, January 4 – 8 2016.
17. Z. Zhang and R. V. Cowlagi. Incremental path repair in hierarchical motion-planning with dynamic feasibility guarantees for mobile robotic vehicles. In *European Control Conference ECC'15*, Linz, Austria, July 15 – 17 2015.
16. R. V. Cowlagi. Multiresolution aircraft guidance in a spatiotemporally-varying threat field. In *Proceedings of the Guidance, Navigation, and Control Conference, AIAA SciTech 2015*, number AIAA 2015-1078, Kissimmee, FL, USA, January 5 – 9 2015.
15. R. V. Cowlagi. Multiresolution path-planning with traversal costs based on time-varying spatial fields. In *Proceedings of the 53rd IEEE Conference on Decision & Control*, pages 3745–3750, Los Angeles, CA, USA, December 15–17 2014.
14. R. V. Cowlagi and D. N. Kordonowy. Geometric abstractions of vehicle dynamical models for intelligent autonomous motion. In *Proceedings of the 2014 American Control Conference*, pages 4840–4845, Portland, OR., June 4 – 6 2014.
13. D. N. Kordonowy, J. T. Chambers, and R. V. Cowlagi. Contingency management for condition-aware unmanned aerial vehicles. In *Proceedings of the AIAA Infotech@Aerospace 2013 Conference*, Boston, MA, USA, 19 – 22 Aug 2013.

12. J. H. Jeon, R. V. Cowlagi, S. C. Peters, S. Karaman, E. Frazzoli, P. Tsiotras, and K. Iagnemma. Optimal motion planning with the half-car dynamical model for autonomous high-speed driving. In *Proceedings of the 2013 American Control Conference*, Washington, DC, USA, 17 – 19 Jun 2013.
11. D. Allaire, J. Chambers, R. V. Cowlagi, D. Kordonowy, M. Lecerf, L. Mainini, F. Ulker, and K. Willcox. *An Offline/Online DDDAS Capability for Self-Aware Aerospace Vehicles*, volume 18, pages 1959 – 1968. Elsevier, 2013. 2013 International Conference on Computational Science.
10. R. V. Cowlagi and P. Tsiotras. Hierarchical motion planning with kinodynamic feasibility guarantees: Local trajectory planning via model predictive control. In *Proceedings of the 2012 IEEE International Conference on Robotics and Automation*, pages 4003–4008, St. Paul, MN, USA, 14–18 May 2012.
9. R. V. Cowlagi and P. Tsiotras. Multi-resolution h-cost motion planning: A new framework for hierarchical motion planning for autonomous mobile vehicles. In *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots & Systems IROS 2011*, pages 3501–3506, San Francisco, CA, USA, 25–30 Sep 2011.
8. R. V. Cowlagi and P. Tsiotras. Multi-resolution path planning: Theoretical analysis, efficient implementation, and extensions for dynamic environments. In *Proceedings of the 49th IEEE Conference on Decision and Control*, Atlanta, GA, 15 – 17 Dec 2010.
7. R. V. Cowlagi and J. H. Saleh. *Coordinability and Consistency in Accident Causation and System Safety: Towards a Formal Foundation of Safety in Sociotechnical and Multilevel Systems*, pages 1836–1844. Taylor & Francis, London, United Kingdom, 2010.
6. R. V. Cowlagi and P. Tsiotras. On the existence and synthesis of curvature-bounded paths inside nonuniform rectangular channels. In *Proceedings of the 2010 American Control Conference*, pages 5382 – 5387, Baltimore, MD, USA, 30 Jun – 2 Jul 2010.
5. R. V. Cowlagi and P. Tsiotras. Kinematic feasibility guarantees in geometric path planning using history-based transition costs over cell decompositions. In *Proceedings of the 2010 American Control Conference*, pages 5388 – 5393, Baltimore, MD, USA, 30 Jun – 2 Jul 2010.
4. R. V. Cowlagi and P. Tsiotras. Shortest distance problems in graphs using history-dependent transition costs with application to kinodynamic path planning. In *Proceedings of the 2009 American Control Conference*, pages 414 – 419, St. Louis, MO, USA, 9 – 12 Jun 2009.
3. R. V. Cowlagi and P. Tsiotras. Multiresolution path planning with wavelets: A local replanning approach. In *Proceedings of the 2008 American Control Conference*, pages 1220–1225, Seattle, WA, USA, 11–13 Jun 2008.
2. R. V. Cowlagi and P. Tsiotras. Beyond quadtrees: Cell decompositions for path planning using the wavelet transform. In *Proceedings of the 46th IEEE Conference on Decision and Control*, pages 1392–1397, New Orleans, LA, 12–14 Dec 2007.
1. S. P. Bhat and R. V. Cowlagi. Semi-global practical stability of periodic time-varying systems via averaging: A Lyapunov approach. In *Proceedings of the 45th IEEE Conference on Decision and Control*, pages 361–365, San Diego, CA, USA, 13 – 15 Dec 2006.

11c. Publications at Non-Peer-Reviewed Venues

5. R. V. Cowlagi, J. T. Chambers, and N. Baltadjiev. Route-planning for real-time safety-assured autonomous aircraft. In *Proceedings of the AIAA AVIATION 2016, Multidisciplinary Design Optimization*, Washington, DC, June 2016. to appear.
4. J. Chambers, N. Baltadjiev, and R. V. Cowlagi. Real-time safety-assured autonomous aircraft. In *Proceedings of AIAA AVIATION 2016, Multidisciplinary Design Optimization*, Washington, DC, 2016 2016. to appear.
3. D. Cyr, P. Guarino, J. I. Hitchen, R. Morar, J. P. Sperry, R. V. Cowlagi, D.J. Olinger, and D. J. Nyren. Stabilization of helicopter sling loads with passive and active control surfaces. In *Proceedings of the 54th AIAA Aerospace Sciences Meeting, AIAA SciTech 2016*, number AIAA-2016-2031, San Diego, CA, USA, January 4 – 8 2016.
2. F. Alibay, V. Desaraju, R. V. Cowlagi, J. E. Duda, A. W. Johnson, and J. A. Hoffman. Multi-vehicle lunar operations simulation using SEXTANT. In *Proceedings of the AIAA Space 2012 Conference & Exposition*, Pasadena, CA, USA, Sep 2012.
1. P. Tsiotras and R. V. Cowlagi. Achieving increased mobility and autonomy for ground vehicles over rough terrain. In *Proceedings of the 26th Army Science Conference*, Orlando, FL, USA, 6–8 Dec 2008.

12. Fellowships and Grants

12a. Grants Awarded

3. “Multiscale Dynamic Data-Driven Guidance and Control for Autonomous Vehicle Networks,” Air Force Office of Scientific Research, 2016 Young Investigator Program; amount \$432,114. Period of performance: March 2016 — Feb 2019.
2. “Real-time Safety-Assured Autonomous Aircraft,” US Air Force SBIR Phase II Base contract; sub-contract from Aurora Flight Sciences Corp., total amount \$500,000, WPI sub-award amount \$184,973. Period of performance: August 2015 — February 2017.
Note: An additional award for a six-month Phase II Option period is pending. The total award amount for the Option period is \$250,000, with the WPI sub-award amount approximately \$70,000.
1. “Real-time Safety-Assured Autonomous Aircraft,” US Air Force SBIR Phase I contract; sub-contract from Aurora Flight Sciences Corp., total amount \$150,000, WPI sub-award amount \$37,389. Period of performance: July 2014 – March 2015.

12b. Grants Awarded Prior to Joining WPI

2. “Team Performance Metrics for Command and Control of Unmanned Systems,” Office of Naval Research SBIR Phase I contract awarded; amount \$150,000. Period of performance: October 2012 — October 2013 (at Aurora Flight Sciences Corp.)
1. “Automated Model Generation and Simulation Tools for Aircraft Carrier Deck Operations,” Office of Naval Research SBIR Phase I contract awarded; amount \$150,000 (at Aurora Flight Sciences Corp.).

13. Professional Presentations

- Robotics division at Laboratoire d’analyse et d’architecture des systemes (LAAS-CNRS), Toulouse, France; July 2015, invited by Dr. Thierry Simeon.

- *SIAM Conference on Control and its Applications (CT15)*, Paris, France; July 2015.
- *AFOSR Annual Young Investigators Research Program Meeting*, Washington, DC, USA; June 2015.
- *Robotics Engineering Colloquium*, WPI; October 2014, invited by Dr. Sonia Chernova.
- *Department of Mechanical Engineering, Tufts University*, Medford, MA, USA; March 2014, invited by Dr. Jason Rife.
- *2nd NSF Workshop on Formal Composition of Motion Primitives*, Philadelphia, PA, USA; April 2013.
- *United Technologies Research Center*, East Hartford, CT, USA; April 2012, invited by Dr. Suresh Kannan.
- *Department of Mechanical Engineering and Materials Sciences, Duke University*, Durham, NC, USA; March 2012, invited by Dr. Devendra P. Garg.
- *Halliburton Research and Development Center*, Dallas, TX, USA; February 2012, invited by Dr. Jason Dykstra.
- *Aurora Flight Sciences Corp., Research & Development Center*, Cambridge, MA, USA; February 2012, invited by Dr. James D. Paduano.
- *Department of Mechanical Engineering, WPI*, Worcester, MA, USA; February 2012, invited by Dr. Jamal Yagoobi.
- *Robotics Section, Jet Propulsion Laboratory, California Institute of Technology*, Pasadena, CA, USA; February 2012, invited by Dr. Richard Volpe.
- *Center for Systems and Control Engineering, Indian Institute of Technology Bombay*, Mumbai, India; January 2011, invited by Dr. Ravi Banavar.
- Presentations at each of the conference venues listed under the previous subsections titled “*Publications in Peer-Reviewed Conference Proceedings*” and “*Publications at Non-Peer-Reviewed Venues.*”

14. Professional Memberships and Offices

- Member, AIAA Guidance, Navigation, and Controls Technical Committee
- Member, Institute of Electrical and Electronics Engineers (IEEE)
- Member, American Institute of Aeronautics and Astronautics (AIAA)
- Member, Society for Industrial and Applied Mathematics (SIAM)

15. Editorial and Referee Activities

- **Associate Editor**, *Aerospace Science and Technology* by Elsevier, since April 2014.
- **Associate Editor**, IEEE Control Systems Society Conference Editorial Board, since September 2015.
- **Technical Program Committee Member**, 2016 American Control Conference, Boston, MA.
- **Reviewer for the following journals:**
 IEEE Trans. Robotics; IEEE Trans. Automatic Control; Robotics & Automation Letters; IEEE Trans. Industrial Electronics; J. Guidance, Control, and Dynamics; Aerospace Science and Technology; European J. Control; Automatica; IEEE Trans. Automation Science & Engineering; Robotics and Autonomous Systems; The Aeronautical Journal; ASME J. Dynamic Systems, Measurement, and Control; Nuclear Engineering & Technology; Risk Analysis

- **Reviewer for the following conferences** (all annual):
American Control Conference; IEEE Conference on Decision and Control; IEEE International Conference on Robotics and Automation; IEEE/RSJ International Conference on Intelligent Robots and Systems; European Control Conference

16. Honors and Awards Related to Scholarship

- 2016 Air Force Office of Scientific Research Young Investigator Research Program (YIP) Award.
- Student Best Paper Award, 2009 American Control Conference, St. Louis, MO, USA.
- 2005 Aeronautical Society of India Award for Outstanding Performance in the M.Tech. degree program.
- Best Presentation Awards: 2009 & 2010 American Control Conferences.
- American Automatic Control Council Travel award for the 2009 American Control Conference, St. Louis, MO, USA.
- IEEE-ICRA Travel award for the International Conference on Robotics & Automation 2012, St. Paul, MN, USA.

SERVICE

17. To Profession

Session chair or co-chair at the following conferences:

- 2016 American Control Conference, Boston, MA.
- AIAA SciTech 2015, Kissimmee, FL.
- 53rd IEEE Conference on Decision & Control, Los Angeles, CA.
- 2014 American Control Conference, Portland, OR.
- AIAA Infotech@Aerospace 2013, Boston, MA.
- 2012 IEEE International Conference on Robotics and Automation, St. Paul, MN.

18. To Department and University

- Member of the Graduate Committee, Aerospace Engineering Program (since August 2014).
- Member of the Graduate Committee, Department of Mechanical Engineering (since November 2013).
- Organizer of AE Graduate Seminar (August 2013 — May 2015).
- Organizer of ME Graduate Seminar (since September 2015).
- Member of the Aerospace Engineering Program Committee (August 2013 — August 2014).
- Thesis or Dissertation Committee Member:
 9. Dmitry Sinyukov, RBE Ph.D. student; advisor Prof. T. Padir.
 8. Tatiana Egorova, AE Ph.D. student; advisor Prof. N. A. Gatsonis.
 7. Mahdi Heydari, ME Ph.D. student; advisor Prof. M. A. Demetriou.
 6. Fahad Khan, ME Ph.D. student; advisor Prof. B. Savelonis.

5. Ryan Fredette, AE M.S. student; advisor Prof. D. J. Olinger.
4. Xiaoran Chen, ME M.S. student; advisor Prof. C. Furlong-Vazquez.
3. Garth Blocher, ME M.S. student; advisor Prof. C. Furlong-Vazquez.
2. Yang Song, ME M.S. student; advisor Prof. J. Sullivan.
1. Min Ying, ME M.S. student; advisor Prof. S. Nestinger.

19. To Community

Occasional volunteer service at the *India Society of Worcester*, Shrewsbury, MA.