MARCIA K. O'MALLEY

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RESEARCH INTERESTS

Design, control, and evaluation of upper extremity rehabilitation robots. Design and control of compliant actuation systems, series-elastic actuation. Human robot interaction, haptic device performance, control for bilateral teleoperation systems. Computational assessment of human motor control and surgical skill. Virtual environments and haptic feedback for skill assessment and performance augmentation. Educational haptics.

RANK

Rice University

Stanley C. Moore Professor, Mechanical Engineering, Rice University
Date of appointment: January 1, 2018

Special Advisor to the Provost on Educational and Research Initiatives for Collaborative Health, Rice University
July 1, 2017 - present

Professor, Mechanical Engineering, Rice University
Date of promotion: January 1, 2015

Associate Professor, Mechanical Engineering and Materials Science, Rice University
Date of promotion with tenure: July 1, 2010

Assistant Professor, Mechanical Engineering and Materials Science, Rice University
Initial Date of appointment: July 1, 2001 Contract renewal: July 1, 2004

Professor, Computer Science, Rice University (Complementary)
Date of appointment: July 1, 2005 (Assistant), July 1, 2010 (Associate), Jan 1, 2015 (Full)

Professor, Electrical and Computer Engineering, Rice University (Complementary)
Date of appointment: Jan 1, 2017 (Full)

Texas Medical Center

Senior Scientist, TIRR-Memorial Hermann Hospital
Date of appointment: April 1, 2013 - present

Adjunct Associate Professor of Physical Medicine and Rehabilitation, Baylor College of Medicine
Date of appointment: October 2, 2005 - present

Adjunct Assistant Professor of Physical Medicine and Rehabilitation, Univ. of Texas Medical School-Houston
Date of appointment: June 1, 2011 - present

EDUCATION

Vanderbilt University, Nashville, TN, August 2001
Doctor of Philosophy, Mechanical Engineering, Advisor: Dr. Michael Goldfarb
Thesis: *The Effect of Machine Performance on Haptic Fidelity*

Vanderbilt University, Nashville, TN, May 1999
Master of Science, Mechanical Engineering, Advisor: Dr. Michael Goldfarb
Thesis: *Development of Sensor Packages and Software for a Three Degree-of-Freedom Haptic Interface*

Purdue University, BS in Mechanical Engineering, May 1996

EMPLOYMENT

Rice University	Houston, TX
Stanley C. Moore Professor of Mechanical Engineering	1/18-present
Professor of Mechanical Engineering	1/15-12/17
Associate Professor of Mechanical Engineering	7/10-12/14
Assistant Professor of Mechanical Engineering	7/01-6/10
TIRR-Memorial Hermann	Houston, TX
Director of Rehabilitation Engineering (Consultant)	8/12-present

Vanderbilt University — Nashville, TN
Graduate Research Assistant — 5/97-7/01
Graduate Teaching Assistant — 8/96-5/97

Dynamic Structures and Materials, LLC — Nashville, TN
Consultant — 8/99-4/01

OTHER ACTIVITIES

Houston Medical Robotics — Houston, TX
Co-Founder and Advisor of start-up company developing ultrasound guided peripheral vein access system, with FDA 510K in place. — 7/08-present

HONORS AND AWARDS

ASME Fellow, 2014
IEEE Senior Member, 2013
Senior Scientist, TIRR-Memorial Hermann, 2013
IEEE/ASME Transactions on Mechatronics Best Paper Award, 2016
IEEE International Conference on Rehabilitation Robotics, Best Student Paper Award, 2015
ASME Dynamic Systems and Controls Conference, Best Robotics Conference Paper, 2013
IEEE World Haptics Conference Best Paper Award, 2011
George R. Brown Award for Superior Teaching, Rice University, 2008 and 2017
National Science Foundation CAREER Award, 2005
Office of Naval Research (ONR) Young Investigator, 2004
Hamill Innovation Award, Rice Institute of Biosciences and Bioengineering, 2017
Medical Innovation Award, Rice Institute of Biosciences and Bioengineering, 2010
NASA Johnson Space Center Automation, Robotics, and Simulation Division Elite Team Award, 2003
NASA/ASEE Summer Faculty Fellowship, 2002 and 2003
Vanderbilt University Graduate Fellowship, 1996-2001
NASA Graduate Student Researchers Program Fellowship, 1998-2001

RESEARCH

REFEREED JOURNAL PUBLICATIONS *Publications with students designate graduate students (*) and undergraduates (^).*

1. Chad G. Rose*, Craig G. McDonald*, Janelle P. Clark*, and Marcia K. O'Malley (in press) Reflection on System Dynamics Principles Improves Student Performance in Labs with the Haptic Paddle, *IEEE Transactions on Education*, doi: 10.1109/TE.2018.2804327
2. Andria J. Farrens, Andrea Zonnino, Andrew Erwin*, Marcia K. O'Malley, Curtis L. Johnson, David Ress, and Fabrizio Sergi (2018) Quantitative Testing of fMRI compatibility of an Electrically Active Device for Robot-Assisted Sensorimotor Protocols, *IEEE Trans. on Biomedical Engineering*. 65(7): 1595-1606. doi: 10.1109/TBME.2017.2741346
3. V. Chawda*, O. Celik*, M. K. O'Malley (2018) Evaluation of Velocity Estimation Methods Based on their Effect on Haptic Device Performance, *IEEE/ASME Transactions on Mechatronics*, 23(2):604-613. doi: 10.1109/ TMECH.2018.2805863
4. A. Schwein, B. Kramer*, P. Chinnadurai, N. Virmanii, S. Walker, M. O'Malley, A. Lumsden, and J. Bismuth (2018) Electromagnetic tracking of flexible robotic catheters enables "assisted navigation" and brings automation to endovascular navigation in an ex-vivo study, *Journal of Vascular Surgery*, 67(4): 1274–1281, DOI: http://dx.doi.org/10.1016/j.jvs.2017.01.072
5. Leonardo Meli, Irfan Hussain, Mirko Aurilio, Marcia O'Malley, and Domenico Prattichizzo (2018) The hBracelet: a wearable haptic device for the distributed mechanotactile stimulation of the upper limb, *IEEE Robotics and Automation Letters (RA-L)*, 3(3): 2198-2205, doi: 10.1109/LRA.2018.2810958
6. Dylan P. Losey*, Craig G. McDonald*, Edoardo Battaglia*, and Marcia K. O'Malley (2018) A Review of Intent Detection, Arbitration, and Communication Aspects of Shared Control for Physical Human-Robot Interaction, *ASME Applied Mechanics Reviews* (invited) 70(1):010804-010804-19. doi:10.1115/1.4039145
7. Dylan P. Losey*, Craig G. McDonald*, Edoardo Battaglia*, and Marcia K. O'Malley (2018) Closure to "Discussion of 'A Review of Intent Detection, Arbitration, and Communication Aspects of Shared Control for

Physical Human–Robot Interaction"' (Losey, D. P., McDonald, C. G., Battaglia, E., and O'Malley, M.K., 2018, ASME Appl. Mech. Rev., 70(1), p. 010804), *ASME Applied Mechanics Reviews*, 70(1):016004-016004-2. doi:10.1115/1.4039225

8. Dylan P. Losey* and Marcia K. O'Malley (2018) Trajectory Deformations from Physical Human-Robot Interaction, *IEEE Transactions on Robotics*, 34(1): 126-138, DOI: 10.1109/TRO.2017.2765335
9. G.E. Francisco, N. Yozbatiran, J. Berliner, M.K. O'Malley, A.U. Pehlivan*, Z. Kadivar, K. Fitle*, and C. Boake (2017) Robotic-assisted training of arm and hand movement shows functional improvements for incomplete cervical SCI, *American Journal of Physical Medicine and Rehabilitation (PM&R)*, 96(10): S171-S177. doi: 10.1097/PHM.0000000000000815.
10. A.E. Erwin*, M.K. O'Malley, D. Ress, and F. Sergi (2017) Kinesthetic Feedback During 2DOF Wrist Movements via a Novel MR-Compatible Robot, *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, 25(9): 1489-1499. doi: 10.1109/TNSRE.2016.2634585
11. John Michael Frullo^, Jared Elinger^, Kyle Fitle*, Ali Utku Pehlivan*, Kathryn Nedley, Gerard Francisco, Fabrizio Sergi, and Marcia K. O'Malley (2017) Effects of Assist-As-Needed Upper Extremity Robotic Therapy after Incomplete Spinal Cord Injury: A Parallel-Group Controlled Trial. *Frontiers in Neurorobotics*, 11:26. doi: 10.3389/fnbot.2017.00026
12. Nuray Yozbatiran, Zafer Keser, Khader Hasan, Argyrios Stampas, Radha Korupolu, Sam Kim, Marcia K. O'Malley, Felipe Fregni, and Gerard E. Francisco (2017) White matter changes in corticospinal tract associated with improvement in arm and hand functions in incomplete cervical spinal cord injury. *Spinal Cord Series and Cases* 3, 17028; doi:10.1038/scsandc.2017.28
13. Adeline Schwein, Benjamin Kramer*, Ponraj Chinnadurai, Sean Walker, Marcia O'Malley, Alan Lumsden, and Jean Bismuth (2016) Flexible robotics with electromagnetic tracking improve safety and efficiency during in vitro endovascular navigation, *Journal of Vascular Surgery*, 63(1): 285-286
14. Sean Estrada*, Cassidy Duran, Daryl Schulz, Jean Bismuth, Michael D. Byrne, and Marcia K. O'Malley (2016) Smoothness of surgical tool tip motion correlates to skill in endovascular tasks, *IEEE Transactions on Human-Machine Systems*, 46(5): 647-659. DOI:10.1109/THMS.2016.2545247
15. Nuray Yozbatiran, Zafer Keser, Matthew Davis, Argyrios Stampas, Marcia K. O'Malley, Catherine Cooper-Hay, Joel Frontera, Felipe Fregni, and Gerard E. Francisco (2016) Transcranial Direct Current Stimulation (tDCS) of the Primary Motor Cortex and Robot-assisted Arm Training in Chronic Incomplete Cervical Spinal Cord Injury: A Proof of Concept Sham-Randomized Clinical Study, *NeuroRehabilitation*, 39(3): 401-411, DOI: 10.3233/NRE-161371
16. Yingfu Zeng, Chad Rose, Walid Taha, Adam Duracz, Kevin Atkinson, Roland Philippsen, Robert Cartwright, Marcia O'Malley (2016) Modeling Electromechanical Aspects of Cyber-Physical Systems," *Journal of Software Engineering for Robotics*, 7(1):100-119.
17. Dylan P. Losey*, Andrew Erwin*, Craig G. McDonald*, Fabrizio Sergi, and Marcia K. O'Malley (2016) A Time Domain Approach to Control of Series Elastic Actuators: Adaptive Torque and Passivity-Based Impedance Control, *IEEE/ASME Trans. on Mechatronics*, 21(4): 2085-2096, DOI: 10.1109/TMECH.2016.2557727 **Best Paper in Journal Award for 2016**
18. Nikunj A. Bhagat*, Anusha Venkatakrishnan, Berdakh Abibullaev, Edward J. Artz*, Nuray Yozbatiran, Amy A. Blank, James French*, Christof Karmonik, Robert G. Grossman, Marcia K. O'Malley, Gerard E. Francisco, and Jose L. Contreras-Vidal (2016) Design and optimization of an EEG-based brain machine interface (BMI) to an upper-limb exoskeleton for stroke survivors, *Frontiers in Neuroscience*, section on Neuroprosthetics, Vol. 10. DOI=10.3389/fnins.2016.00122
19. Ali Utku Pehlivan*, Dylan Losey*, and Marcia K. O'Malley, (2016) Minimal Assist-as-Needed (mAAN) Controller for Upper Limb Robotic Rehabilitation, *IEEE Transactions on Robotics*, 32(1):113-124, DOI: 10.1109/TRO.2015.2503726\
20. Julie M. Walker^, Amy Blank, Patricia Shewokis, and Marcia K. O'Malley, (2015) Tactile feedback of object slip facilitates virtual object manipulation, *IEEE Transactions on Haptics*, 8(4):454-466, DOI: 10.1109/TOH.2015.2420096
21. Priyanshu Agarwal*, Jonas Fox*, Youngmok Yun*, Marcia K. O'Malley, and Ashish D. Deshpande (2015) An Index finger exoskeleton with series elastic actuation for rehabilitation: Design, control and performance characterization, *International Journal of Robotics Research (IJRR)*, 34: 1747-1772 doi: 10.1177/ 0278364915598388
22. F. Sergi, A.C. Erwin*, and M.K. O'Malley (2015) Interaction control capabilities of an MR-compatible compliant actuator for wrist sensorimotor protocols during fMRI, *ASME/IEEE Transactions on Mechatronics*, 20(6): 2678 – 2690, doi: 10.1109/TMECH.2015.2389222

23. J.D. Brown*, A. Paek*, M. Syed*, M.K. O'Malley, P.A. Shewokis, J.L. Contreras-Vidal, R.B. Gillespie, and A.J. Davis (2015) An exploration of grip force regulation with a low-impedance myoelectric prosthesis featuring referred haptic feedback, *Journal of Neural Engineering and Rehabilitation,* 12(104): DOI: 10.1186/s12984-015-0098-1
24. Cassidy Duran, Sean Estrada*, Marcia O'Malley, Malachi Sheahan, Murray Shames, Jason T Lee, and Jean Bismuth (2015) The model for Fundamentals of Endovascular Surgery (FEVS) successfully defines the competent endovascular surgeon, *Journal of Vascular Surgery*, 62(6):1660-1666e.3
25. F. Sergi and M.K. O'Malley (2015) On the stability and accuracy of high stiffness rendering in non-backdrivable actuators through series elasticity, *Mechatronics*, 26: 64-75. doi:10.1016/ j.mechatronics.2015.01.007
26. C. Duran, S. Estrada*, M. O'Malley, A.B. Lumsden, and J. Bismuth (2015) Kinematics effectively delineate accomplished users of endovascular robotics with a physical training model. *Journal of Vascular Surgery*, 61(2): 535-541.
27. V. Chawda*, O. Celik*, and M.K. O'Malley (2015) A Method for Selecting Velocity Filter Cut-off Frequency for Maximizing Impedance Width Performance in Haptic Interfaces, *ASME Journal of Dynamic Systems, Measurement, and Control,* Vol. 137: 024503-1 – 024503-5. DOI:10.1115/1.4028526
28. A.U. Pehlivan*, F. Sergi, and M.K. O'Malley (2014) A Subject-Adaptive Controller for Wrist Robotic Rehabilitation, *ASME/IEEE Trans. on Mechatronics,* 20(3): 1338-1350. DOI: 10.1109/TMECH.2014.2340697
29. V. Chawda* and M.K. O'Malley (2014) Position Synchronization in Bilateral Teleoperation under Time-Varying Communication Delays, *ASME/IEEE Transactions on Mechatronics,* 120(1): 245-253. DOI: 10.1109/ TMECH.2014.2317946
30. A.U. Pehlivan*, F. Sergi, A. Erwin*, N. Yozbatiran, G. Francisco, and M.K. O'Malley (2014) Design and validation of the RiceWrist-S exoskeleton for robotic rehabilitation after incomplete spinal cord injury, *Robotica* Special Issue on Rehabilitation Robotics and Human-Robot Interaction, 32(8): 1415-1431. doi:10.1017/S0263574714001490
31. F. Sergi, A. Blank, and M. O'Malley (2014) Upper Extremity Exoskeletons for Robot Aided Rehabilitation, *Mechanical Engineering Magazine*, ASME Press, Focus Section on Dynamic Systems and Controls, September, 6-11.
32. O. Celik* and M.K. O'Malley (2014) Vary Slow Motion: Effect of Task Forces on Movement Variability and Implications for a Novel Skill Augmentation Mechanism, *IEEE Robotics and Automation Magazine,* 21(3): 115-122. DOI: 10.1109/MRA.2013.2275696
33. A.A. Blank, J.A. French*, A.U. Pehlivan*, and M.K. O'Malley (2014) Current trends in robot-assisted upper-limb stroke rehabilitation: promoting patient engagement in therapy, *Current Physical Medicine and Rehabilitation Reports,* 2:184-195, DOI: 10.1007/s40141-014-0056-z.
34. M.K. O'Malley, S.N. Purkayastha*, N. Howie*, and M.D. Byrne (2014) Identifying Successful Motor Task Completion via Motion-Based Performance Metrics, *IEEE Transactions on Human Machine Systems,* 44(1): 139-145. DOI: 10.1109/THMS.2013.2290129
35. S.N. Purkayastha*, M.D. Byrne, and M.K. O'Malley (2013) Human-scale motion capture with an accelerometer-based gaming controller, *Journal of Robotics and Mechatronics*, 25(3):458-465.
36. O. Celik*, H.B. Gilbert^, and M.K. O'Malley (2013) Dynamic Displacement Sensing, System Identification and Control of a Speaker-Based Tendon Vibrator via Accelerometers, *IEEE/ASME Transactions on Mechatronics,* 18(2): 812-817, DOI: 10.1109/TMECH.2012.2195326.
37. D. Powell* and M.K. O'Malley (2012) The Task-Dependent Efficacy of Shared-Control Haptic Guidance Paradigms, *IEEE Transactions on Haptics,* Special Issue on Haptic Human-Robot Interaction, 5:208-219.
38. Z. Kadivar, J.L. Sullivan^, D.P. Eng^, A.U. Pehlivan*, M.K. O'Malley, N. Yozbatiran, and G.E. Francisco. (2012) RiceWrist Robotic Device for Upper Limb Training: Feasibility Study and Case Report of Two Tetraplegic Persons with Spinal Cord Injury. *International Journal of Biological Engineering*, 2(4):27-38.
39. N. Yozbatiran, J. Berliner, M.K. O'Malley, A.U. Pehlivan, Z. Kadivar, C. Boake, G.E. Francisco (2012) Robotic training and clinical assessment of upper extremity movements after spinal cord injury; a single case report, *Journal of Rehabilitation Medicine* 44:186-188, doi: 10.2340/16501977-0924
40. Z. M. Oden, M.K. O'Malley, G. Woods, T. Kraft, and B. Burke (2012) Outcomes of Recent Efforts at Rice University to Incorporate Entrepreneurship Concepts into Interdisciplinary Capstone Design, *International Journal of Engineering Education*, 28(2): 1-5.
41. V. Chawda* and M.K. O'Malley (2011) Vision Based Force Sensing for Nanomanipulation, *IEEE/ASME Transactions on Mechatronics,* 16(6): 1177-1183, DOI: 10.1109/TMECH.2010.2093535

42. A. Gupta* and M.K. O'Malley (2010) Disturbance observer-based force estimation for haptic feedback, *ASME Journal of Dynamic Systems, Measurement and Control* 133(1):014505-1--014505-4. DOI:10.1115/1.4001274
43. J. Bismuth, M.A. Donovan, M.K. O'Malley, H.F. El Sayed, J.J. Naoum, E.K. Peden, M.G. Davies, and A.B. Lumsden (2010) Incorporating simulation in vascular surgery education, *Journal of Vascular Surgery*, 52(4): 1072-80.
44. O. Celik*, M.K. O'Malley, C. Boake, H. Levin, N. Yozbatiran, and T. Reistetter. (2010) Normalized Movement Quality Measures for Therapeutic Robots Strongly Correlate with Clinical Motor Impairment Measures, *IEEE Transactions on Neural Systems and Rehabilitation Engineering* 18(4): 433-444.
45. J. Huegel*, O. Celik*, A. Israr, and M.K. O'Malley. (2009) Expertise-Based Performance Measures in a Virtual Training Environment. *Presence: Teleoperators and Virtual Environments*, 18(6): 449-467.
46. M.K. O'Malley, K.S. Sevcik*, and E. Kopp*. (2009) Improved Haptic Fidelity via Reduced Sampling Period with an FPGA-Based Real-Time Hardware Platform. *ASME Journal of Computing and Information Science in Engineering*, 9(1): 011002-1 – 011002-7.
47. A. Israr, Y. Li*, V. Patoglu, and M.K. O'Malley (2009). Passive and Active Discrimination of Natural Frequency of Virtual Dynamic Systems. *IEEE Transactions on Haptics*, 2(1): 40-51.
48. Y. Li*, V. Patoglu, and M.K. O'Malley (2009). Negative efficacy of fixed gain error reducing shared control for training in virtual environments. *ACM Transactions on Applied Perception*. 6(1): 3-1 – 3-21.
49. A. Gupta*, V. Patoglu, M.K. O'Malley, and C.M. Burgar (2008). Design, Control and Performance of RiceWrist: A Force Feedback Wrist Exoskeleton for Rehabilitation and Training, *Int'l Journal of Robotics Research (IJRR)* 27(2): 233-51. **Named 1 of top 10 contributing papers to IJRR's 2010 Impact Factor**
50. M.K. O'Malley, T. Ro, and H.S. Levin (2006). Assessing and Inducing Neuroplasticity with TMS and Robotics, *Archives of Physical Medicine and Rehabilitation*; Supplement 2 / Neuroplasticity and Brain Imaging Research: Implications for Rehabilitation), Vol. 87(12): 59-66.
51. M.K. O'Malley and G. Upperman^ (2006). A Study of Perceptual Performance in Haptic Virtual Environments, *Journal of Robotics and Mechatronics*, 18(4): 467-475.
52. A. Gupta* and M.K. O'Malley (2006) Design of a Haptic Arm Exoskeleton for Training and Rehabilitation, *ASME/IEEE Transactions Mechatronics*, 11(3): 280-289.
53. M.K. O'Malley, A. Gupta*, M. Gen^, and Y. Li* (2006) Shared Control in Haptic Systems for Performance Enhancement and Training, *ASME Journal of Dynamic Systems, Measurement and Control*, 128(1): 75-85.
54. M. O'Malley and M. Goldfarb (2005) On the Ability of Humans to Haptically Identify and Discriminate Real and Simulated Objects. *Presence: Teleoperators and Virtual Environments*, 14(3): 366-376.
55. M. O'Malley and M. Goldfarb (2004) The Effect of Virtual Surface Stiffness on the Haptic Perception of Detail. *IEEE/ASME Transactions on Mechatronics*, 9(2): 448-454.
56. M. O'Malley and R. Ambrose (2003) Haptic Feedback Applications for Robonaut, *Industrial Robot: An International Journal*, 30(6): 531-542. **Literati Award for Excellence (best paper in volume) 2004**
57. M. O'Malley and M. Goldfarb (2002) The Effect of Force Saturation on the Haptic Perception of Detail. *IEEE/ASME Transactions on Mechatronics*, 7(3): 280-288.

PATENTS

1. Ozkan Celik*, Vinay Chawda*, and Marcia K. O'Malley (2018) "Method and Device for Real-Time Differentiation of Analog and Digital Signals," US Patent 9,910,411.

BOOK CHAPTERS

1. J.C. Huegel* and M.K. O'Malley, Workload and Performance Analyses with Haptic and Visually Guided Training in a Dynamic Motor Skill Task, *Computational Surgery and Dual Training: Computing, Robotics, and Imaging*, Marc Garbey, Barbara Lee Bass, Scott Berceli, Christophe Collet, and Pietro Cerveri (Eds.), Springer New York, pp. 377-387, 2014.
2. M.K. O'Malley, O. Celik*, J.C. Huegel*, M.D. Byrne, J. Bismuth, B. Dunkin, A. Goh, and B. Miles, Robotics as a Tool for Training and Assessment of Surgical Skill, *Computational Surgery and Dual Training: Computing, Robotics, and Imaging*, Marc Garbey, Barbara Lee Bass, Scott Berceli, Christophe Collet, and Pietro Cerveri (Eds.), Springer New York, pp. 365-375, 2014.
3. J. Bismuth and M.K. O'Malley, "Surgical Robotics: Innovations, Development, and Shortcomings," In Pumps and Pipes: Proceedings of the Annual Conference, Mark G. Davies (Editor), Alan B. Lumsden (Editor), William E. Kline (Editor), Ioannis Kakadiaris (Editor), Springer, pp. 33-44, 2010.

4. M.K. O'Malley and A. Gupta*, "Haptic Interfaces," In HCI: Beyond the GUI, Phil Kortum (Ed.) Morgan-Kaufman Publisher, pp. 25-74, 2008. (invited)
5. M.K. O'Malley, "Principles of Human-machine Interfaces and Interactions," In Life Science Automation: Fundamentals and Applications, Mingjun Zhang, Bradley Nelson and Robin A. Felder (Eds.) Artech House Publishers, pp. 101-125, 2007. (invited)
6. A. Gupta* and M.K. O'Malley, "Robotic Exoskeletons for Upper Extremity Rehabilitation," In Rehabilitation Robotics, Sashi S. Kommu (Ed.) I-Tech Education and Publishing, Vienna, Austria, EU, pp. 371-396, 2007. (invited)

REFEREED CONFERENCE PROCEEDINGS (proceedings are typically 6-8 pages long)

1. Nathan Dunkelberger*, Jennifer L. Sullivan*, Joshua Bradley*, Nickolas P. Walling^, Indu Manickam*, Gautam Dasarthy, , Ali Israr, Frances W.Y. Lau, Keith Klumb, Brian Knott, Freddy Abnousi, Richard Baraniuk, and Marcia K. O'Malley, Conveying Language through Haptics: A Multi-sensory Approach, International Symposium on Wearable Computing ISWC 2018 (conditionally accepted)
2. Andrew Erwin*, Nick Moser^, Craig. G. McDonald*, and Marcia K. O'Malley, A Bowden Cable-Based Series Elastic Actuation Module for Assessing the Human Wrist, proceedings of the ASME Dynamic Systems and Controls Conference, Sept 30 - October 3, Atlanta, GA (to appear)
3. Logan Farrell*, James Holley*, William Bluethmann, and Marcia K. O'Malley (2018) Cycloidal Geartrain In-Use Efficiency Study," Proceedings of the ASME International Design Engineering Technical Conference (IDETC), Aug 26-29 (to appear)
4. Janelle Clark*, Sung Y. Kim^, and Marcia K. O'Malley (2018) The Rice Haptic Rocker: Comparing Longitudinal and Lateral Upper-Limb Skin Stretch Perception, in Haptics: Science, Technology, and Applications, Proceedings of 11th International Conference, EuroHaptics 2018, Pisa, Italy, June 13-16, Part II, D. Prattichizzo, H. Shinoda, H.Z. Tan, E. Ruffaldi, and A. Frisoli, Ed., Springer, pp. 125-134.
5. Nathan Dunkelberger*, Joshua Bradley*, Jennifer L. Sullivan, Ali Israr, Frances W. Y. Lau, Keith Klumb, Freddy Abnousi, and Marcia K. O'Malley (2018) Improving Haptic Cue Perception Accuracy with Multi-modal Cue Delivery, in Haptics: Science, Technology, and Applications, Proceedings of 11th International Conference, EuroHaptics 2018, Pisa, Italy, June 13-16, Part II, D. Prattichizzo, H. Shinoda, H.Z. Tan, E. Ruffaldi, and A. Frisoli, Ed., Springer, pp. 289-301.
6. Janelle Clark*, Sung Y. Kim^, and Marcia K. O'Malley (2018) The Rice Haptic Rocker: Altering the Perception of Skin Stretch through Mapping and Geometric Design," Proceedings of the IEEE Haptics Symposium, San Francisco, CA, March 23-28, pp. 192-197.
7. William H. Jantscher*, Shivam Pandey*, Priyanshu Agarwal, Sadie Richardson^, Bowie Lin^, Michael Byrne, and Marcia K. O'Malley (2018) Toward improved surgical training: Delivering smoothness feedback using haptic cues, Proceedings of the IEEE Haptics Symposium, San Francisco, CA, March 23-28, pp. 241-246. **Finalist, Best Hands-on Demonstration**
8. Evan Pezent*, Simone Fani, Joshua Bradley*, Matteo Bianchi, and Marcia K. O'Malley (2018) Separating Haptic Guidance from Task Dynamics: A Practical Solution via Cutaneous Devices, Proceedings of the IEEE Haptics Symposium, San Francisco, CA, March 23-28, pp. 20-25.
9. Andrea Bajcsy, Dylan P. Losey*, Marcia K. O'Malley, and Anca Dragan, (2018) Learning from Physical Human Corrections, One Feature at a Time, Proceedings of the IEEE Human Robot Interaction (HRI) Conference, March 5-8, Chicago, IL.
10. Logan C. Farrell*, Troy A. Dennis*, Julia A. Badger, and Marcia K. O'Malley (2017) Simply Grasping Simple Shapes: Commanding a Humanoid Hand with a Shape-Based Synergy, Proceedings of the International Symposium on Robotics Research (ISRR), Puerto Varas, Chile, December 11-14
11. Andrea Bajcsy, Dylan P. Losey*, Marcia K. O'Malley, and Anca Dragan (2017) Learning Robot Objectives from Physical Human Interaction, Proceedings of the 1st Annual Conference on Robot Learning, in the series Proceedings of Machine Learning Research, ed. S. Levine, V. Vanhoucke, and K. Goldberg, Mountain View, California, November 13 - 15
12. Derek Wolf, Nathan Dunkelberger, Craig G. McDonald, Kyra Rudy, Christopher Beck, Marcia K. O'Malley, and Eric Schearer (2017) Combining Functional Electrical Stimulation and a Powered Exoskeleton to Control Elbow Flexion, Proceedings of the International Symposium on Wearable Robotics and Rehabilitation (WeRob), November 5-8, Houston, TX, pp. 87-88.

13. Shivam Pandey, Michael D. Byrne, William Jantscher, Priyanshu Agarwal, and Marcia K. O'Malley (2017) Toward training surgeons with motion-based feedback: Initial validation of smoothness as a measure of motor learning, Proceedings of the Human Factors and Ergonomics Society Annual Meeting, 61(1), pp. 1531-1535
14. Chad Rose, Nathan Bucki, Marcia O'Malley (2017) A Ball and Beam Module for a Haptic Paddle Education Platform, Proceedings of the ASME Dynamic Systems and Controls Conference, Tysons Corner, Virginia, October 11-13, 2017
15. Andrew Erwin, Evan Pezent, Joshua Bradley, and Marcia K. O'Malley (2017) The Effect of Robot Dynamics on Smoothness during Wrist Pointing, Proceedings of the IEEE International Conference on Rehabilitation Robotics (ICORR), London, UK, July 17-20
16. Evan Pezent, Chad G. Rose, Ashish D. Deshpande, and Marcia K. O'Malley (2017) Design and Characterization of the OpenWrist: a Robotic Wrist Exoskeleton for Coordinated Hand-Wrist Rehabilitation, Proceedings of the IEEE International Conference on Rehabilitation Robotics (ICORR), London, UK, July 17-20, **Finalist, Best Poster Award**
17. Craig G. McDonald, Troy A. Dennis, and Marcia K. O'Malley (2017) Characterization of Surface Electromyography Patterns of Healthy and Incomplete Spinal Cord Injury Subjects Interacting with an Upper-Extremity Exoskeleton, Proceedings of the IEEE International Conference on Rehabilitation Robotics (ICORR), London, UK, July 17-20
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110. S. McJunkin*, J. Speich, and M. O'Malley (2005) Transparency Extension in Haptic Interfaces via Adaptive Dynamics Cancellation, Proceedings of the ASME International Mechanical Engineering Congress and Exposition, pp 1581-1587.
111. M. O'Malley (2005) Shared Control for Upper Extremity Rehabilitation in Virtual Environments, Proceedings of the ASME International Mechanical Engineering Congress and Exposition, pp 1673-1681.

112. M. O'Malley and D. McStravick (2005) Virtual Lab for System Identification of an Electromechanical System, Proceedings of the ASME Int'l Mechanical Engineering Congress and Exposition, pp 705-712.
113. S. McJunkin*, M. O'Malley, and J. Speich (2005) Transparency of a Phantom Premium Haptic Interface for Active and Passive Human Interaction, Proceedings of the American Control Conference (ACC), v 5, pp. 3060-3065.
114. S. McJunkin*, Y. Li*, and M. O'Malley (2005) Human-Machine Admittance and Transparency Adaptation in Passive User Interaction with a Haptic Interface, Proceedings of the 13th International Symposium on Haptic Interfaces for Virtual Environment and Teleoperator Systems and the First Joint World Haptics Conference (HAPTICS), Pisa, Italy, March 17-20, pp. 283-289.
115. A. Gupta* and M. O'Malley (2004) Design of a Haptic Arm Exoskeleton for Training and Rehabilitation, Proceedings of the ASME International Mechanical Engineering Congress and Exposition, pp 1011-1018.
116. D. McStravick and M. O'Malley (2004) Virtual Labs in the Engineering Curriculum, ASEE Annual Conference and Exposition**,** Salt Lake City, Utah, June 20-23, pp. 15293-15304.
117. G. Upperman^, A. Suzuki^, and M. O'Malley (2004) Comparison of Human Haptic Size Discrimination Performance in Simulated Environments with Varying Levels of Force and Stiffness, Proceedings of the 12th Symposium on Haptic Interfaces for Virtual Environment and Teleoperator Systems (HAPTICS), Chicago, IL, March 27-28, pp. 169-175.
118. J. Glassmire^, M. O'Malley, W. Bluethmann, and R. Ambrose (2004) Cooperative Manipulation between Humans and Teleoperated Agents," Proceedings of the 12th Symposium on Haptic Interfaces for Virtual Environment and Teleoperator Systems (HAPTICS), Chicago, IL, March 27-28, pp. 114-120.
119. J. Speich and M. O'Malley (2003) Current Challenges in the Control of Haptic Interfaces and Bilateral Teleoperation Systems, Proceedings of the ASME International Mechanical Engineering Congress and Exposition, pp. 743-750.
120. M.K. O'Malley and A. Gupta* (2003) Skill Transfer in a Simulated Underactuated Dynamic Task, Proceedings of the 12th IEEE Workshop Robot and Human Interactive Communication RO-MAN 2003, October 31 - November 2, pp. 315-320.
121. M.K. O'Malley, K.J. Hughes^, D.F. Magruder, and R.O. Ambrose (2003) Simulated Bilateral Teleoperation of Robonaut, Proceedings of the AIAA Space 2003 Conf, Long Beach, CA, September 23-25, pp. 6272-6277.
122. M. O'Malley and A. Gupta* (2003) Passive and Active Assistance for Human Performance of a Simulated Underactuated Dynamic Task, 11th Symposium on Haptic Interfaces for Virtual Environment and Teleoperator Systems (HAPTICS), Los Angeles, CA, March 22-23, pp. 348-355.
123. M. O'Malley and S. Hughes^ (2003) Simplified Authoring of 3D Haptic Content for the World Wide Web, 11th Symposium on Haptic Interfaces for Virtual Environment and Teleoperator Systems (HAPTICS), Los Angeles, CA, March 22-23, pp. 428-429.
124. M. O'Malley and Goldfarb, M. (2002) The Implications of Surface Stiffness for Size Identification and Perceived Surface Hardness in Haptic Interfaces. Proceedings of the IEEE International Conference on Robotics and Automation (ICRA), pp. 1255-1260.
125. M. Kilchenman (O'Malley) and Goldfarb, M. (2002) Comparison of Human Haptic Size Identification and Discrimination Performance in Real and Simulated Environments. Proceedings of the IEEE 10th International Symposium on Haptic Interfaces for Virtual Environment and Teleoperator Systems (HAPTICS), pp. 10-17.
126. M. Kilchenman (O'Malley) and Goldfarb, M. (2001) Force Saturation, System Bandwidth, Information Transfer, and Surface Quality in Haptic Interfaces. Proceedings of the IEEE International Conference on Robotics and Automation (ICRA), pp. 1382-1387.
127. M. Kilchenman (O'Malley) and Goldfarb, M. (2000) Implications of Haptic Interface Force Saturation on the Haptic Display of Detail. Proceedings of the ASME International Mechanical Engineering Congress and Exposition, DSC-Vol. 69-2, pp. 1125-1131.

INVITED PRESENTATIONS

1. "Enhancing Human Performance with Wearable Haptics," Robotics Research Jam Sessions, School of Engineering, University of Pisa, June 11, 2018
2. "Guiding with touch: Objective assessment and haptic cueing to improve surgical performance on virtual and robotic platforms," Department of Mechanical Engineering Seminar Series, University of Minnesota, Minneapolis, MN, May 2, 2018.
3. "Artists in Dialogue: Leo Villareal and Marcia O'Malley," Moody Center for the Arts, Rice University, Houston, TX, April 6, 2018

4. "The Need for Creativity & Diversity in the Digital Age!" Enaxis Leadership Forum, Houston, TX, February 1, 2018.
5. "Engaging the Patient in Therapy with Wearable Technologies," Invited Talk, ISRR Workshop at Pontificia Universidad Católica de Chile, December 15, 2017
6. "A Perspective on Interaction and Medical Robotics," Invited Keynote, International Symposium on Robotics Research (ISRR), Puerto Varas, Chile, December 12, 2017.
7. "Engaging the Patient in Therapy with Wearable Technologies," International Symposium on Wearable Robotics (WeRob), Houston, TX, November 7, 2017.
8. Challenge and Engagement: Ensuring effective upper limb robotic rehabilitation Gulf Coast Consortia Cluster for Engineering 7th Annual NeuroEngineering Symposium, on October 26, 2017.
9. "Enhancing Human Performance with Wearable Robotics," Technology Collaboration Center, Automation & Robotics Workshop, Houston, TX, August 24, 2017.
10. "Naturalistic Sensory Feedback for Intuitive Prosthesis Control," Robotics Seminar Series, Oregon State University, May 26, 2017
11. "Challenge and Engagement: Ensuring effective upper limb robotic rehabilitation," 5th Arizona State University Rehabilitation Robotics Workshop, Tempe, AZ, February 6, 2017
12. "Challenge and Engagement: Ensuring effective upper limb robotic rehabilitation," Neural Computation and Engineering Connection, University of Washington, Seattle, WA, January 20, 2017 (keynote speaker)
13. "pHRI: Physical Human Robot Interaction," SpaceCom Robotics Panel, Houston, TX, November 16, 2016.
14. "On the Efficacy of Isolating Shoulder and Elbow Movements with a Soft, Portable, and Wearable Robotic Device," 2016 Symposium on Wearable Robotics and the 2016 International Conference on Neurorehabilitation in 'La Granja de San Ildefonso', Segovia (Spain), October 19, 2016.
15. "Building Research Collaborations in Robotics and Intelligent Devices for Healthcare," Robotics & Intelligent Devices for Healthcare Workshop, University of Texas at Austin, Keynote Speaker, September 16, 2016.
16. "BMI Control of a Therapeutic Exoskeleton to Facilitate Personalized Robotic Rehabilitation of the Upper Limb," 5th Anniversary of the NRI, Congressional Robotics Caucus event, demonstration, June 9, 2016.
17. "Naturalistic Sensory Feedback for Intuitive Prosthesis Control," Centro di Ricerca "E. Piaggio" Bioengineering and Robotics Research Center Seminar Series University of Pisa, May 24, 2016.
18. "Naturalistic Sensory Feedback for Intuitive Prosthesis Control," Department of Information Engineering and Mathematics, University of Siena, May 24, 2016.
19. "Challenge and Engagement: Ensuring effective upper limb robotic rehabilitation," Workshop on Human-Robot Interfaces for Enhanced Physical Interactions, IEEE International Conference on Robotics and Automation, Stockholm, Sweden, May 16, 2016.
20. "Haptic Guidance and Assessment of Motor Skills," Systems Engineering Seminar, University of Reading, Reading, UK, February 4, 2016.
21. "Naturalistic Sensory Feedback for Intuitive Prosthesis Control," Imperial College, Robotics Forum Seminar Series, London, England, February 3, 2016.
22. "Challenge and Engagement: Ensuring effective upper limb robotic rehabilitation," University of Edinburgh, Edinburgh Centre for Robotics, Gateway Event Speaker, Edinburgh, Scotland, January 22, 2016.
23. "Challenge and Engagement: Ensuring effective upper limb robotic rehabilitation," ETH-Zurich, Department of Mechanical and Process Engineering, Institute of Robotics and Intelligent Systems, Distinguished Seminar in Robotics, Systems, and Control, Zurich, Switzerland, December 11, 2015.
24. "Robotic Rehabilitation of Forearm and Wrist with the MAHI Exo-II and RiceWrist," ESA - European Space Agency, ESTEC, ESA Telerobotics & Haptics Laboratory Seminar, Mechatronics & Optics Division, Noordwijk, The Netherlands, November 20, 2015.
25. "Lessons learned in haptic guidance for motor learning," TU-Delft, Robotics Institute, Delft, Netherlands, November 19, 2015.
26. "Lessons learned in haptic guidance for motor learning," Workshop on Motor learning and neurorehabilitation: training with or without errors? IEEE ICORR 2015, International Conference on Rehabilitation Robotics, 11-14 August, Singapore.
27. "Robotic Rehabilitation of Forearm and Wrist with the MAHI Exo-II and RiceWrist," Workshop on Neuromechanics and Technology for the Wrist (beyond the wristwatch), IEEE ICORR 2015, International Conference on Rehabilitation Robotics, 11-14 August, Singapore.
28. "Robotic Rehabilitation of Forearm and Wrist with the MAHI Exo-II and RiceWrist," Workshop on Challenges and Strategies in the Design and Control of Upper Extremity Exoskeletons, 2015 IEEE International Conference on Robotics and Automation, Seattle, Washington, May 30, 2015.

29. "Robotic Rehabilitation of Forearm and Wrist with the MAHI Exo-II and RiceWrist," Workshop on Rehabilitation Robotics and Human-Robot Interaction, 2015 IEEE International Conference on Robotics and Automation, Seattle, Washington, May 26, 2015.
30. "Natural Sensory Feedback for Intuitive Prosthesis Control," Johns Hopkins University Laboratory for Computational Sensing and Robotics (LCSR) Seminar Series, Baltimore, MD, March 4, 2015.
31. "Techniques for Active User Engagement in Robotic Rehabilitation," Rehabilitation Institute of Chicago (RIC) Sensory Motor Performance Program (SMPP) Seminar Series, Chicago, IL, November, 7, 2014.
32. "Biorobotics for Healthcare: Restoring Upper Limb Function after Neurological Injury," Texas Biorobotics Workshop invited speaker, ASME Dynamic Systems and Control Conference (DSCC), San Antonio, Texas, October 22nd-24th, 2014.
33. "Tool movement characteristics correlate to surgical skill in fundamental endovascular tasks," Methodist Institute for Technology, Innovation, and Education (MITIE) seminar series, Houston, TX, October 20, 2014.
34. "Natural Sensory Feedback for Intuitive Prosthesis Control," 2014 Eurohaptics Workshop on Haptics in Rehabiltation, Prosthestics and Neural Engineering: Robotic Aspects and Neuro-scientific Principles, Versailles, France, June 27, 2014.
35. "Upper Limb Exoskeletons for Rehabilitation after Incomplete SCI," NSBRI Symposium, Designing for the Future: Remote Rehabilitation and Integration of New Technologies in Spaceflight, Houston, TX, May 7, 2014.
36. "Mechatronic Systems for the Training of Human Motor Control," Johns Hopkins University Laboratory for Computational Sensing and Robotics (LCSR) Seminar Series, Baltimore, MD, April 30, 2014.
37. "Control Strategies for Ensuring Active User Engagement in Robotic Rehabilitation of the Upper Limb," Invited Speaker, 2nd Annual Piper Health Solutions Workshop on Rehabilitation Robotics, Arizona State University, Tempe, Arizona, February 28-March 1, 2014.
38. "Techniques for Active User Engagement in Robotic Rehabilitation," University of Illinois Mechanical Engineering Department Seminar Series, Champaign, IL, December 10, 2013.
39. "DSCC 2013 Modeling Special Session: What are the fundamental skills and practices to impart to our students?" Invited panelist, ASME Dynamic Systems & Controls Conference, Palo Alto, CA, October 22, 2013.
40. "Techniques for Active User Engagement in Robotic Rehabilitation," University of Michigan Rehabilitation Robotics Seminar Series (cross-departmental, including Mechanical Engineering, Biomedical Engineering, Kinesiology, and Physical Medicine & Rehabilitation), Ann Arbor, MI, October 9, 2013.
41. "NI myRIO and Rice University," Academic Day Keynote speaker, National Instruments NI Week 2013, Austin, TX, August 8, 2013
42. "Introducing physical compliance in wrist rehabilitation robots," Workshop on the Design and Control of Robotic Exoskeletons with Compliant Joints and Actuation Systems, 13th International Conference on Rehabilitation Robotics (ICORR), Seattle, Washington, June 26, 2013
43. "Human-Robot interaction in the rehabilitation of persons with SCI," Physicians Conference with TIRR-Memorial Hermann PM&R Residents and Attendings, Houston, TX, May 6, 2013.
44. "Considerations for the Design and Implementation of Haptic Shared Control Architectures," Invited speaker, 2013 IEEE World Haptics Conference workshop on Physical human-robot collaboration and haptic shared control, Daejeon, South Korea, April 14, 2013.
45. "Mechatronic Systems for the Training of Human Motor Control," Department of Computer Science and Engineering Departmental Seminar, Pohang University of Science and Technology (POSTECH), Pohang, Republic of Korea, April 12, 2013.
46. "Mechatronic Systems for the Training of Human Motor Control," Cognitive Psychology Seminar, Rice University, Houston, TX, March 6, 2013.
47. "Techniques for Active User Engagement in Robotic Rehabilitation," Invited Speaker, 1st Annual Piper Health Solutions Workshop on Rehabilitation Robotics, Arizona State University, Tempe, Arizona, February 22-23, 2013.
48. "Mechatronic Systems for the Repair and Training of Human Sensorimotor Control," Robotics and Mechatronics (RAM) Colloquium, University of Twente, Enschede, Netherlands, February 14, 2013.
49. "Mechatronic Systems for the Repair and Training of Human Sensorimotor Control," Halmstad Colloquium, Halmstad University, Halmstad, Sweden, February 12, 2013.
50. "Exposing the 'Hidden' Technology of Controls," Invited Panelist, 2012 ASME Dynamic Systems and Controls Conference, Ft. Lauderdale, FL, October 17, 2012.
51. "Mechatronic Systems for Human Sensorimotor Control," Case Western Reserve University Electrical and Computer Engineering seminar series, Cleveland, OH, April 10, 2012.

52. "Mechatronic Systems for Human Sensorimotor Control," Yale University Mechanical Engineering Materials Science Seminar, New Haven, CT, December 12, 2011.
53. "Robot-assisted training in sports: Considerations for the Design and Implementation of Guidance Architectures," 2011 IEEE Engineering in Medicine and Biology (EMB) Conference mini-symposium, Boston, MA, September 3, 2011.
54. "Going Distal: Design/control/Mechatronics perspective," 2011 IEEE Engineering in Medicine and Biology (EMB) Conference workshop on Rehabilitation and Therapeutic Robotics for Upper and Lower Extremity, Boston, MA, August 30, 2011.
55. "Considerations for the Design and Implementation of Haptic Guidance Algorithms," 2011 IEEE World Haptics Conference Workshop on Human-X-Haptic Collaboration, Istanbul, Turkey, June 21, 2011.
56. "Simulation over lunch," AORTA II with Cardiovascular Simulation Rodeo Symposium, Houston, TX, March 10-12, 2011.
57. "Mechatronic Systems for Human Sensorimotor Control," Georgia Tech RIM (Robotics and Intelligent Machines) Seminar Series, Atlanta, GA, February 23, 2011
58. Keynote Lecture, National Center for Women & Information Technology (NCWIT) Houston Affiliate Award Celebration, Houston, TX, February 19, 2011
59. "Robotics as a Tool for Training and Assessment of Surgical Skill," 3rd Annual International Conference in Computational Surgery, Houston, TX, January 27, 2011
60. "On the Design and Use of Therapeutic Robots: Ensuring Clinical Relevance," University of Pennsylvania GRASP lab seminar series, Philadelphia, PA, November 5, 2010
61. "On the Design and Use of Therapeutic Robots: Ensuring Clinical Relevance," Yale Mechanical Engineering seminar series, New Haven, CT, November 3, 2010
62. "Mechatronic Systems for Human Sensorimotor Control," UT Austin Mechanical Engineering seminar series, Austin, TX, October 28, 2010
63. "On the Design, Control, and Use of Therapeutic Robots: A Mechatronics Perspective for Ensuring Clinical Relevance," ASME Dynamic Systems and Controls Conference, Workshop on Therapeutic Robotics, Cambridge, MA, September 12, 2010.
64. "An Automated Cyro-EM Grid Preparation System," National Instruments Week, Austin, TX, August 3, 2010.
65. Panelist, IEEE/ASME Int'l Conference on Advanced Intelligent Mechatronics (AIM 2010) Mechatronics for Bio-Systems and Healthcare, Montreal, CA, July 8, 2010.
66. "On the Design and Use of Therapeutic Robots: Ensuring Clinical Relevance," Department of Computer Science Seminar series, University of British Columbia, Vancouver, BC, Canada, June 21, 2010.
67. "On the Design and Use of Therapeutic Robots: Ensuring Clinical Relevance," Mechanical Engineering Seminar series, Vanderbilt University, Nashville, TN, April 28, 2010
68. "On the Design and Use of Therapeutic Robots: Ensuring Clinical Relevance," Mechanical and Aerospace Engineering Colloquium series, Cornell University, Ithaca, NY, March 5, 2010
69. "Haptic Guidance for Performance Enhancement and Training," Mechanical and Aerospace Engineering Seminar Series, University of Buffalo, Buffalo, NY, March 4, 2010
70. "Robotics as Tool for Training and Assessment of Surgical Skill," Scott Department of Urology Grand Rounds, Baylor College of Medicine, Houston, TX, September 30, 2009.
71. "Towards Unified Robotic Motor Function Improvement Measures for Rehabilitation Robotics," Department of Physical Medicine and Rehabilitation Grand Rounds, Baylor College of Medicine, Houston, TX, July 31, 2009.
72. "Helping Teach Engineers Real World Skills with Hands-On Labs," Invited Panelist, American Society of Engineering Education National Meeting, June 12, 2009
73. "Towards Unified Robotic Motor Function Improvement Measures for Rehabilitation Robotics," Mission Connect, Houston, TX, March 13, 2009.
74. "Haptic Feedback and Motor Adaptation," Texas A&M University, Department of Health and Kinesiology Motor Neuroscience seminar series, College Station, TX, February 6, 2009.
75. "Towards Unified Robotic Motor Function Improvement Measures for Rehabilitation Robotics," Rice University Bioengineering Department seminar series, Houston, TX, October 7, 2008.
76. "Control Theory and Feedback with Medical Applications," Annual meeting of the American Association of Physicists in Medicine (AAPM), Houston, TX, July 27-31, 2008.
77. "Human-Robot Interaction: Machines to Enhance Human Performance," Plenary Lecture, The Academy of Medicine, Engineering, and Science of Texas 2008 Annual Conference, Houston, TX, Jan 10-11, 2008.
78. "Extending the human being via robotics." Scientia Lecture Series, Rice University, Houston, TX, November 14, 2006.

79. "Shared Control for Robot-Assisted Training and Rehabilitation," Iowa State University Mechanical Engineering Graduate Seminar Series, Ames, IA, September 22, 2006.
80. "Shared Control for Robot-Assisted Training and Rehabilitation," Texas A&M Mechanical Engineering Graduate Seminar Series, College Station, TX, April 26, 2006.
81. "Nanorobotic Manipulation with Force Feedback," 5th Annual Nanotechnology Venture Forum, "The Big Business of Small Technology," Hosted by the Rice Alliance, CBEN, and the Richard E. Smalley Institute for Nanoscale Science and Technology, Rice University, Houston, TX, January 20, 2006.
82. "A Systems Approach to Improving Performance of Haptic Devices," Mechanical Engineering Seminar Series, Johns Hopkins University, Baltimore, MD, December 8, 2005.
83. "Passive and Active Haptic Feedback for Training," Spring 2005 NCARAI Seminar Series distinguished speaker, The Navy Center for Applied Research in Artificial Intelligence (NCARAI), Naval Research Laboratory, Washington DC, June 6, 2005.
84. "Shared Control in Virtual Environments with Haptic Feedback," Rice University Department of Computer Science, Spring 2005 Colloquium Series, Houston, TX, April 13, 2005.
85. "Robotics and Haptic Interfaces for Rehabilitation," Physical Medicine and Rehabilitation (PM&R) Grand Rounds, Harris County Hospital District, Houston, TX, September 14, 2004.
86. "Robotics and Haptic Interfaces for Rehabilitation," Research, Education and Development Seminar (REDS), Baylor College of Medicine, Department of Physical Medicine and Rehabilitation, Houston, TX, August 13, 2004.
87. "Active Haptic Assistance for Training in Virtual Environments," Attention, Perception and Modeling for Complex Displays. ONR Workshop, Naval Undersea Warfare Center, Newport, RI, May 6, 2004.
88. "Haptic Interface Control Design for Performance and Stability Robustness," Mechanical Engineering Department, System Modeling and Control (SMAC) Group, Purdue University, West Lafayette, IN, April 28, 2004.
89. "Haptic Interfaces: A Novel Approach for Virtual and Remote Environment Interactions," Rice Alliance for Technology and Entrepreneurship Information Technology Forum, February 6, 2004.
90. "Haptic Interface Control Design for Performance and Stability Robustness," Mechanical Engineering Seminar Series, University of Houston, October 23, 2003.
91. "Robots in Space," NASA-ASEE Faculty Fellowship Program Seminar Series, June 26, 2003.
92. Workshop on Automation and Robotics – Houston AIAA Chapter, Keynote Speaker, Houston, TX, May 2, 2003.
93. "Control Issues in Haptics and Bilateral Teleoperation," CITI (Computer and Information Technology Institute) Seminar, Rice University, Houston, TX, May 2, 2003.
94. "Haptic Interface Control Design for Performance and Stability Robustness," Civil and Environmental Engineering and Dynamical Systems Group Seminar, Rice University, Houston, TX, April 24, 2003.
95. "Real-Time Control Topics in Robotics and Mechatronics," A presentation to National Instruments, Austin, TX, December 18, 2002.
96. "Simulated Bilateral Teleoperation of Robonaut," Dexterous Robotics Lab, NASA Johnson Space Center, Houston, TX, September 27, 2002.
97. "The Implications of low-fidelity feedback in haptic displays," Virtual Reality Lab at the Naval Research Lab, Washington, D.C., May 16, 2002.
98. "Implications of Machine Design for the Haptic Display of Detail," Rice University Mechanical Engineering and Materials Science Department Seminar Series, September 12, 2001.
99. "Implications of Machine Design for the Haptic Display of Detail," University of South Carolina Mechanical Engineering Department, February 2001.
100. "Implications of Machine Design for the Haptic Display of Detail," Rice University Mechanical Engineering and Materials Science Department, January 26, 2001.

FUNDED RESEARCH

Grants serving as PI

1. IBB Hamill Innovation Award - $10,000 (11/01/2017-10/31/2018) Innovative Robotic Forelimb Rehabilitation after Cervical Spinal Cord Injury, PI
2. Mission Connect - $60,000 (10/20/17 - 10/19/19) Evaluation and Validation of a Glove-based Exoskeleton for Assistance and Rehabilitation, PI

3. Rice University InterDisciplinary Excellence Awards (IDEA) - $75,000 (8/1/17 – 1/31/19) Towards Experience-Guided Design of Effective Assistive Devices, PI (with Zoë Wool and Phil Kortum)
4. Facebook - $403,572 (6/19/17 – 3/19/18), Innatam - Tactile Translation of Speech with Multi-Modal Wearable Haptic, PI (with Rich Baraniuk, Co-PI)
5. Mission Connect - $10,000 (8/1/17 – 7/31/18), Innovative robotic forelimb rehabilitation after cervical spinal cord injury, PI
6. Rice University Award for International Collaboration - $12,000 Rice University – University of Pisa / IIT Robotics Partnership, PI
7. NSF IIS-1638073 NRI: Guiding with touch: Haptic cueing of surgical techniques on virtual and robotic platforms - $1,000,000 (1/1/17 - 12/31/19), PI (with Mike Byrne, PSYC and Dr. Jean Bismuth, Methodist)
   Supplement - $8,000 (5/1/18 – 8/30/18) REU Supplement for one student, PI (100%)
   Supplement - $8,000 (5/1/17 – 8/30/17) REU Supplement for one student, PI (100%)
8. NSF IIS-1649302 Doctoral Consortium at the 2016 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2016) - $25,000 (8/1/16 - 7/31/17), PI
   Supplement - $8,000 (5/1/17 – 8/30/17) REU Supplement for one student, PI (100%)
9. Rice University Faculty Initiatives Fund - $37,676.38 (7/1/16 - 6/30/17), Does Making Matter? The Impact of the Making Movement on the Development of Engineering Identity and Early Professional Career Choices, PI (with co-PIs Margaret E. Beier, Ann Saterbak, Matthew Wettergreen)
10. Mission Connect / TIRR Foundation - $60,000 (1/1/16 – 06/30/17) Detecting Movement Intent in Spinal Cord Injury Patients Using Surface Electromyography for Robotic Rehabilitation, PI (100%)
11. Mission Connect / TIRR Foundation Gene Alford Fund for Robotics - $10,000 (8/1/15 – 7/31/16) – "Glove-Based Exoskeleton for Rehabilitation," PI (100%)
12. Mission Connect / TIRR Foundation - $20,000 (9/1/14 - 8/31/15) - "Surface EMG for detecting movement intent in robotic rehabilitation," PI (100%).
13. NASA - $149,999 (5/1/14 - 2/29/16) - "Development and Assessment of a Single Limb Cable Driven Upper Extremity Exoskeleton Garment for Rehabilitation," PI (100%).
14. Mission Connect / TIRR Foundation - $49,854 (12/1/13 - 11/30/14) - "Effect of assist-as-needed robot aided rehabilitation strategies in subjects with incomplete spinal cord injury," PI (100%).
15. NASA Space Technology Research Fellowship (for Chad Rose) NNX13AM70H - $249,842 (8/1/13 - 7/31/17) - "Novel Control Techniques for Hand and Wrist Robotic Rehabilitation," 3 years (renewable), PI
16. NASA - NNX13AE93G - $30,000 (1/18/13 - 1/17/14) - "Control of an X1 Joint Module Based on Rehabilitation Robotics Principles," PI (100%)
17. NIH R01 - 1RO1NS081854-01 - NRI-Small: Collaborative Research: BMI Control of a Therapeutic Exoskeleton to Facilitate Personalized Robotic Rehabilitation of the Upper Limb - $1,173,601 (8/1/12 – 6/30/17), PI (with UH – Contreras and UTHSC – Francisco)
18. NSF CNS-1135916 - $480,000 (9/15/11 - 8/30/17) - "CPS: Medium: Collaborative Proposal: Design and development of a cybernetic exoskeleton for hand-wrist rehabilitation through the integration of human passive properties" ($1M total with collaborator, Prof Ashish Deshpande, University of Texas-Austin), 4 years, PI.
   Supplement - $16,000 (5/1/16 – 8/30/16) REU Supplement for two students, PI (100%)
   Supplement - $16,000 (5/1/15 – 8/30/15) REU Supplement for two students, PI (100%)
   Supplement - $12,800 (5/1/14 – 8/30/14) REU Supplement for two students, PI (100%)
   Supplement - $12,800 (5/1/13 – 8/30/13) REU Supplement for two students, PI (100%)
   Supplement - $16,000 (5/1/12 – 8/30/12) REU Supplement for two students, PI (100%)
19. NASA Space Technology Research Fellowship (for Dane Powell) - $183,124 (8/1/11 - 12/31/13) - "Human-in-the-loop Control of a Bipedal Robot with Variable Levels of Autonomy" 11-NSTRF11-0228, 3 years, PI (100%)
20. Mission Connect / TIRR Foundation - $50,000 (6/1/11 - 12/31/12) - "Reach to Grasp: Outfitting the RiceWrist with Grasp Sensing for Robotic Rehabilitation after SCI," PI (80%), Co-PIs Gerard Francisco and Nuray Yozbatiran, UTHSC.
21. Rice University IBB Medical Innovations - $25,000 (1/1/11-12/31/11) - "Brain Reorganization after Constraint–Induced Movement Therapy Augmented with Rice-Wrist Exoskeleton Robot for Individuals with Stroke," PI (50%), Co-PI Newsome, BCM.
22. NSF CISE RI IIS-0812569 – $430,993 (8/1/08 – 7/31/12) – "RI-Small: Cognitive Modeling of Human Motor Skill Acquisition," 3 years, PI, (with Michael Byrne as co-PI) (50%)

Supplement - $9,600 (5/1/12 – 7/31/12) REU Supplement for two students, PI (100%)
Supplement - $16,000 (5/1/10 – 8/31/10) REU Supplement for two students, PI (100%)
Supplement - $16,000 (5/1/09 – 8/31/09) REU Supplement for two students, PI (100%)

23. Central Texas Veterans Health Care System (CTVHCS) Sole Source Contract - $48,659 (9/15/05-9/30/05) Contract V674P-3804 in response to RFP-674-68-05 Research Project, 2 weeks, PI (100%)
24. Smith Foundation - $36,271 (6/15/05 – 6/14/06) – "Robotics-assisted rehabilitation therapy for stroke", 1 year, PI (100%)
25. NSF CAREER CISE IIS-0448341 (Robotics) - $410,000 (5/16/05-5/15/10) – "Shared Control for Skill Transfer in Human-Robot Haptic Interactions", 5 years, PI (100%)
    Supplement - $16,000 (5/1/10 – 8/31/10) REU Supplement for two students, PI (100%)
    Supplement - $16,000 (5/1/09 – 8/31/09) REU Supplement for two students, PI (100%)
    Supplement - $12,000 (5/1/08 – 8/31/08) REU Supplement for two students, PI (100%)
    Supplement - $6,000 (5/1/07 – 8/31/07) REU Supplement for one student, PI (100%)
    Supplement - $12,000 (5/1/06 – 8/31/06) REU Supplement for two students, PI (100%)
26. ONR YIP - $303,078 (6/1/04-5/31/07) ONR Grant No: N00014-04-1-0517, OSR No: 04010602 – "Active Haptic Assistance for Training in Virtual Environments", 3 years, PI (100%)
27. NSF CCLI - $100,000 (7/1/04-6/30/06) NSF DUE-0411235 OSR No: 04120302 – "Hands-on Haptics: Critical Infrastructure for Mechanical Engineering Curriculum Enhancement", PI (100%)
28. National Instruments - $52,224 (9/1/04-8/31/06) OSR No.: 04102002 – "Improvement of Transparency and Stability Robustness in Haptic Systems", 2 years, PI (100%)
29. NASA Johnson Space Center - $10,000 (1/15/04-1/14/05) NASA Grant No: NNJ04HC93G OSR No.: 03052902- "Techniques for Stable Bilateral Teleoperation of Robonaut with Variable Communication Delays," 1 year, PI (50%)
30. RTI University Program - $86,655 (7/1/03) – Software for real-time control
31. SIEP, LLS - $20,000 (12/1/03) – Hardware donation: Phantom Premium 1.0A
32. NASA Johnson Space Center - $13,000 (1/1/02-12/31/04) NASA Grant No: NAG9-1511 - "Simulated Bilateral Teleoperation of Robonaut," 1 year, extended, PI. (100%)
33. NASA Graduate Student Researchers Program (GSRP) Fellowship, Johnson Space Flight Center - $72,000 (8/1/03-7/31/06) 2004 NASA NNJ04JF84H OSR #04013009 - 2003 NASA Grant No: NAG 9-1538 OSR No: 03012805 - "Improvement of Transparency and Stability Robustness in Haptic Systems by Human System Identification," 3 years, PI (100%)
34. National Instruments Equipment Grant - $20,000 - "LabView RT: A Proposal for NI Product Support, Pantograph for Improved Human Arm Dynamic Modeling Experiments", 2003, PI (100%)
35. NASA/ASEE Summer Faculty Fellowship, Johnson Space Center, Engineering Program, $12,000, 2003.
36. NASA/ASEE Summer Faculty Fellowship, Johnson Space Center, Engineering Program, $12,000, 2002.
37. Rice University Brown Teaching Grant - $3,400 (4/1/03 – 3/31/04) - "Virtual Labs", 1 year, co-PI (50%)
38. NASA Graduate Student Researchers Program (GSRP) Fellowship - $66,000 (1998-2001) "Integration of Haptic Feedback into Virtual Environments for Mission Operations Applications," Marshall Space Flight Center, 3 years, PI, (funded prior to coming to Rice) (100%)

Grants serving as co-PI

39. Mission Connect / TIRR Foundation - $20,000 (10/1/14 - 9/30/16) - "Effects of combined non-invasive brain stimulation and robotic-assisted training on arm and hand function in subacute incomplete spinal cord injury," 2 year, PI (100%) of $3973 sub-contract flowing through UTHSC/TIRR (Yozbatiran as PI)
40. NSF DGE-1250104 - IGERT: Neuroengineering from Cells to Systems - $2,796,140 (9/15/13 - 8/31/18), 5 years, co-PI (with Raphael (PI, Rice BIOE), Angelaki (co-PI, BCM Neuroscience), Aazhang (co-PI, Rice ECE), Kemere (co-PI, Rice ECE))
41. Mission Connect / TIRR Foundation - $49,589 (1/1/13 - 12/31/13) - "Effects of combined trans cranial direct current stimulation (tDCS) and robotic-assisted training on arm and hand," 1 year, PI (100%) of $5811 sub-contract flowing through UTHSC/TIRR (Yozbatiran as PI)
42. Rice University Brown Teaching Grant - Course Module on Embedded Electronics Systems for Multidisciplinary Senior Design Projects - $5,000 (7/1/12-6/30/14), 2 years, Co-PI with Professors Gary Woods and Maria Oden

43. NSF CNS-1136099 - CPS: Medium: Collaborative Research: A CPS Approach to Robot Design - $1,400,000 (9/1/11 - 8/31/16), 4 years, Co-PI
44. NSF IIS-1065497 HCC: Medium: Collaborative Research: Improved Interfaces for Neuroprosthetics - $217,701 (6/1/11-5/31/17), PI of portion to Rice University (100%), Collaborative proposal $1.2M with University of Michigan as lead institution
    Supplement - $16,000 (5/1/15 – 8/30/15) REU Supplement for two students, PI (100%)
    Supplement - $12,800 (5/1/14 – 8/30/14) REU Supplement for two students, PI (100%)
    Supplement - $12,800 (5/1/13 – 8/30/13) REU Supplement for two students, PI (100%)
    Supplement - $8,000 (5/1/12 – 8/30/12) REU Supplement for one student, PI (100%)
45. Mission Connect / TIRR Foundation - $70,365 (04/01/09 – 03/31/12) – "Robotic Training of Arm and Hand Movement after Spinal Cord Injury," 2 years, PI (100%) of sub-contract flowing through UTHSC/TIRR (Francisco as PI)
46. NSF CISE CSR – $765,000 (8/1/07-7/31/10) – "Building Physically Safe Embedded Systems", 4 years, co-PI (8%), Submitted 1/17/07. (with Walid Taha, Robert Cartwright, Albert Cheng (UH), Paul Hudak (Yale))
47. NSF DUE CCLI – $50,000 (8/15/07 – 8/14/11) – "Collaborative Research: Phase II development of an innovative multi-functional smart vibration platform," 3 years, co-PI (50%), Submitted 1/10/07 (with Satish Nagarajaiah – UH Gangbing Song is PI)
48. Mission Connect / TIRR Foundation - $33,652 (7/1/07 – 6/30/09) – "Robotic-assisted rehabilitation therapy for motor weakness after stroke," 2 years, co-PI (25%), Submitted 1/17/07 (with Corwin Boake UTHSC, Eduardo M. Castillo UTHSC, Gerard E. Francisco UTHSC, Harvey S. Levin, PhD Baylor College of Medicine, Andrew C. Papanicolaou UTHSC)
49. The National Academies Keck Futures Initiative Keck Futures Grant - $15,000 (6/1/07 – 5/31/08) – "Feedback Control for Smart Prosthetics: An integrated electrophysiological and near-infrared methodology", sub-award from University of Michigan (total award $75,000), Co-PI (25%)
50. Rice CITI ERIT - $48,556 (9/1/04-8/31/06) – "Nano Haptic Robotic System to Enable Nanomanipulation, Nanoassembly, and Nanofabrication", 2 years, co-PI (40%)

STUDENT ADVISING

POST-DOCTORAL RESEARCH ASSOCIATES SUPERVISED

1. Agarwal, Priyanshu (2017, PhD. from University of Texas at Austin, currently Oculus Research)
2. Blank, Amy (2013-2015, Ph.D. from Johns Hopkins University, currently Barrett Technology, Inc)
3. Sergi, Fabrizio (2012-2015, Ph.D. from Campus Bio-Medico University, Rome, Italy, currently Assistant Professor of Biomedical Engineering, University of Delaware)
4. Kadivar, Zahra (2009-2012, part-time in 2014, Ph.D. from Louisiana State University, currently in Neurologic Physical Therapy Residency program in Harris County Health System (Houston, Texas))
5. Israr, Ali (2007-2009, Ph.D. from Purdue University, currently Disney Research)
6. Patoglu, Volkan (2005-2006, Ph.D. from University of Michigan, currently Associate Professor, Sabanci University, Istanbul, Turkey)

VISITING RESEARCH ASSOCIATES SUPERVISED

1. Battaglia, Edoardo (2016-2017, 6 month visiting researcher appointment, Research Center "E.Piaggio", School of Engineering - University of Pisa)
2. Duran, Cassidy MD (2011-2012, 2 year research appointment as part of medical residency in Vascular Surgery, Methodist Hospital)
3. Arasan, Atakan (2011, 1 month research appointment, visiting from Koc University, Istanbul, Turkey)
4. Gulrez, Tauseef (2010, 2 month research appointment)
5. Goldfarb, David MD (2010-2011, 1 year research appointment as part of medical residency in Urology, Baylor College of Medicine)
6. Sander, James MD (2009-2010, 1 year research appointment as part of medical residency in Urology, Baylor College of Medicine)
7. Fahim, Danny MD (2009, 4 month research appointment as part of medical residency in Neurosurgery, Baylor College of Medicine)

8. Goh, Alvin MD (2008-2009, 1 year research appointment as part of medical residency in Urology, Baylor College of Medicine)

STUDENTS SUPERVISED

PH.D. AWARDED

1. Erwin, Andrew. *Series Elastic Actuation: Facilitating Robotic Assessment of Human Neurological and Biomechanical Properties*. May 2018. NSF Graduate Fellow (2013-2018). NASA/Texas Space Grant Consortium Fellow (2013-2014)
2. Pehlivan, Ali Utku. *Subject Adaptive Control Paradigms for Robotic Rehabilitation.* May 2016.
3. Mehling, Joshua. *Impedance Control Approaches for Series Elastic Actuators,* December 2015 (NASA-Johnson Space Center).
4. Estrada, Sean. *Quantitative Movement Analysis in Surgical Tasks for Objective Determination of Surgical Skill.* May 2014 (U.S. Air Force).
5. Chawda, Vinay. *Passivity and Performance Analysis of Haptic and Teleoperation Systems that Employ SOSM Differentiators for Velocity Estimation.* December 2013 (Apple).
6. Celik, Ozkan. *Neuromuscular Mechanisms of Movement Variability: Implications for Rehabilitation and Augmentation*. May 2011. (Assistant Professor, Mechanical Engineering, Colorado School of Mines)
7. Huegel, Joel. *Progressive Haptic Guidance for a Dynamic Task in a Virtual Training Environment.* May 2009 (Professor, Tecnológico de Monterrey – Guadalajara, Mechatronics Department).
8. Gupta, Abhishek. *Disturbance Observer Based Closed Loop Control of Haptic Interfaces*. January 2009 (Assistant Professor, India Institute of Technology (IIT) - Bombay).
9. Li, Yanfang. *Active Haptic Assistance for Training.* May 2008
10. McJunkin, Samuel. *Transparency Improvement for Haptic Interfaces.* May 2007. NASA Graduate Student Researchers Program (2005-2007) (Subsea Engineer, Exxon-Mobil)

PH.D. ADVISEES (IN PROGRESS)

1. Rose, Chad. Expected December 2018. NASA Space Technology Research Fellow (2013-2017). NSF Graduate Fellow Honorable Mention (2013). NASA/Texas Space Grant Consortium Fellow (2013-2014)
2. Losey, Dylan. Expected December 2018. NSF Graduate Fellow (2014-2019)
3. McDonald, Craig. Expected May 2019, NSF Rice Neural Engineering IGERT Fellow (2014-2016).
4. Pezent, Matthew Evan. Expected May 2020.
5. Clark, Janelle. Expected May 2021.
6. Dunkelberger, Nathan. Expected May 2022.
7. Fleck, Joshua. Expected May 2023.
8. Zook, Zane. Expected May 2023.
9. Murali, Barath. Expected May 2024.

M.S. AWARDED

1. Dennis, Troy. *EMG Control of an Upper-Limb Rehabilitation Exoskeleton for SCI Affected Users*, May 2018 (US Air Force)
2. Jantscher, William. *Using Real-Time Smoothness Metrics to Deliver Haptic Performance Cues for a Dexterous Task*, May 2018 (US Air Force)
3. Holley, James. *Estimation and Control of Series Elastic Actuators for Decentralized Systems*, May 2018. (NASA JSC)
4. Bradley, Joshua. *Enhancing Human-Machine Interaction with Wearable Haptic Devices*, May 2018 (US Air Force)
5. Farrell, Logan. *Efficiency of One- and Two-Stage Compact Cycloidal Transmissions for Robotic Applications*, May 2018. (NASA JSC)
6. Clark, Janelle, *Skin Stretch as Haptic Feedback for Upper Limb Prosthetics*, August 2017 (Rice PhD program)
7. Pezent, Evan. *Design, Characterization, and Validation of the OpenWrist Exoskeleton,* May 2017. (Rice PhD Program)

8. McDonald, Craig. *Design and Control of a Cable-Driven Actuation System for Soft Robotic Exoskeletons*, May 2016. (Rice PhD Program)
9. Losey, Dylan. *Adaptive and Self-Adjusting Controllers for Safe and Meaningful Human-Robot Interaction during Rehabilitation*, May 2016. (Rice PhD Program)
10. Kramer, Benjamin. *Using Motion-Based Metrics to Objectively Classify Surgeon Skill and Assess Performance with Augmented Feedback,* May 2016. (US Air Force)
11. Blumenschein, Laura. *Design of a Novel Compliant Sensor for Series Elastic Actuation and Control of a Flexible Cable Conduit Transmission,* May 2016. (NSF Graduate Fellowship, PhD program at Stanford University)
12. Rose, Chad. *Hardware- versus Human-centric Assessment of Rehabilitation Robots,* May 2015. (Rice PhD Program)
13. Fitle, Kyle. *Clinical Evaluation of an Upper Limb Exoskeleton for Rehabilitation after Incomplete Spinal Cord Injury*, May 2015. (US Air Force)
14. Artz, Edward. *Myoelectric Control of a Robotic Exoskeleton for Rehabilitation,* May 2015. (US Air Force)
15. Erwin, Andrew. *Using custom integrated force sensing mechanisms for interaction control in rehabilitation robots* May 2014. (Rice PhD program)
16. French, James. *Towards the Implementation of Non-Invasive Brain Machine Interface Control on a Rehabilitative Robotic Upper Limb Exoskeleton*, May 2014. (US Air Force)
17. Purkayastha, Sagar. *Analysis of human movement for a complex dynamic task: What predicts success?* May 2013. (University of Calgary PhD program)
18. Pehlivan, Ali Utku. *Design and Control of an Exoskeletal Rehabilitation Device for Stroke and Spinal Cord Injury Patients* May 2012. (Rice PhD program)
19. Thompson, Zachary. *An Automated System for Cryo-Electron Microscopy Sample Preparation*. January 2011. (Sandia National Labs, University of Utah PhD program)
20. Powell, Dane. *Implementation and Analysis of Shared-Control Guidance Paradigms for Improved Robot-Mediated Training.* January 2011. NASA Space Technology Research Fellow (2011-2013).
21. Bowen, Kevin. *Development of an Educational Device and Accompanying Laboratory Series for Instruction in an Undergraduate Engineering Course.* May 2007. (Oceaneering, Exxon-Mobil)
22. Kopp, Emilie. *Improved haptic fidelity via reduced sampling period with an FPGA-based real-time hardware platform*. January 2007. (National Instruments)
23. Gupta, Abhishek. *Design and Control of a Haptic Arm Exoskeleton*, May 2004. (Rice PhD program, Assistant Professor, India Institute of Technology (IIT) - Bombay)
24. Bartley, Christopher. *Closed Form Guidance Laws for Intercepting Moving Targets*, Draper Graduate Fellow, May 2004. (US Air Force)
25. Stiles, Brian. *Application of Sequential Auction Techniques to Nonlinear Targeting Assignment for Space-delivered Entry Vehicles*, Draper Graduate Fellow, May 2004. (US Air Force)

M.S. ADVISEES (IN PROGRESS)

1. Britt, John. Expected May 2020
2. Cambio, Brandon. Expected May 2020.

M.M.E. AWARDED

1. Polk, Justin. May 2015.
2. Cassidy, Christopher, May 2015.
3. Altecor, Aleksey, December 2013.
4. Zumbado, Fernando. (MME) *Bilateral Teleoperation of Robonaut with Time Delays.* January 2007. (NASA Johnson Space Center)
5. Black, Benjamin. (MME) *Simulated Bilateral Teleoperation of Robonaut* and *Transparency and Stability in Haptic Interactions*, May 2003. (Ph.D. from Georgia Institute of Technology, now National Instruments)

COMMITTEE MEMBER

1. Hacopian, Emily (PhD, supervised by Jun Lou)
2. Just, Fabian (PhD, supervised by Georg Rauter and Robert Reiner, ETH, Switzerland), expected May 2019.
3. Rao, Prashant (PhD, Ashish Deshpande, UT-Austin)

4. Battaglia, Edoardo (PhD, Matteo Bianchi, University of Pisa, Italy) *Touch on the go: Wearable haptics for sensing and augmented perception*, 2018.
5. Yun, Youngmok (PhD, Ashish Deshpande, UT-Austin) *A Hand Exoskeleton for Study of Rehabilitation and Assistance of Spinal Cord Injury Patients*, December 2017.
6. Zhou, Yu (PhD, Goldman) *Art and Engineering Inspired by Swarm Robotics*. May 2017.
7. Agarwal, Priyanshu (PhD, Ashish Deshpande, UT-Austin) *A Hand Exoskeleton with Series Elastic Actuation for Rehabilitation: Design, Control and Experimentation.* December 2016.
8. Novich, Scott (PhD, Eagleman/Baraniuk) *Sound-to-Touch Sensory Substitution and Beyond*. December 2015.
9. Vasudevan, Hari (PhD, supervised by Aaron Dollar, Yale University) May 2015. (Apple)
10. Habibi, Golnaz (PhD, McLurkin) *Distributed motion planning and distributed manipulation for collective transport.* May 2015.
11. Howie, Nicole (PhD, Byrne) *The Generalizability of Cognitive Modeling Parameters for Older Adults*, May 2015.
12. Gallagher, Melissa (PhD, Byrne) *Modeling Password Entry on Mobile Devices: Please Check Your Password and Try Again*, May 2015.
13. Esmaeil, Mohammad (PhD, supervised by Domenico Campolo, Nanyang Technological University, Singapore), December 2014.
14. Barr, Thomas (PhD, Rixner) *Microcontroller programming for the modern world.* May 2014.
15. Grady, Devin (PhD, Kavraki) *Motion Planning with Uncertain Information in Robotic Tasks*. May 2014.
16. Eason, R. Parker (PhD, Dick) *Attenuation of a linear oscillator using a nonlinear and a semi-active tuned mass damper in series*. May 2013.
17. Feng, Powei (PhD, Warren) *Functional representation and manipulation of shapes with applications in surface and solid modeling*. May 2013.
18. Inoue, Jun (PhD, Taha) *Reasoning about Staged Programs*. May 2012.
19. AbdelGawad, Moez A. (PhD, Cartwright) *NOOP: A Mathematical Model of Object-Oriented Programming.* December 2011.
20. Sucan, Ioan (PhD, Kavraki) *Task and Motion Planning for Mobile Manipulators.* December 2011.
21. Landolsi, Fahkri (PhD, Ghorbel) *AFM-Based Mechanical Nanomanipulation*. May 2011.
22. Bandyopadhyay, Rajarshi (PhD, Taha) *Compiling dynamic languages via statically typed functional languages.* May 2009
23. Plaku, Erion. (PhD, Kavraki) *From High-Level Tasks to Low-Level Motions: Motion Planning for High-Dimensional Nonlinear Hybrid Robotic Systems*. May 2008
24. Weeks, Michael. (PhD, Miele) *The Computation of Optimal Rendezvous Trajectories using the Sequential Gradient-Restoration Algorithm.* May 2006.
25. Wang, Zhiyong. (PhD, Ghorbel) *Modeling and Control of Closed Kinematic Chains: A Singular Perturbation Approach.* January 2005.
26. Butler, Stephen (MS, Kavraiki) *General Algorithms for the Time-Optimal Trajectory Generation Problem.* December 2016.
27. Song, Bill (MS, Lou) *Quantitative Fracture Strength of Lithiated Tin Oxide Nanowires by In-Situ SEM Tensile Experiments.* Expected May 2014.
28. Lynch, Andrew (MS, McLurkin) *Multi-robot Behaviors with Bearing-only Sensors and Scale-free Coordinates,* December 2011.
29. Kong, Zhao (Chad) (MS, Houchens) *Experimental Results and Three-Dimensional Simulations of Instabilities in a Rotating Lid-Driven Cylinder,* December 2011.
30. Rykowski, Joshua (MS, McLurkin) *Pose Estimation With Low-Resolution Bearing-Only Sensors*, December 2011.
31. Grady, Devin (MS, Kavraki) *Asynchronous Distributed Motion Planning with Safety Guarantees under Second-Order Dynamics,* May 2011.
32. Zhu, Yun (MS, Taha) *Acumen: An Environment for Rapid Prototyping of Cyber-physical Systems,* January 2010.
33. Chen, Yan (MS, Ghorbel) *Smart Cantilever Beams for Nanomanipulation.* May 2009.
34. Sucan, Ioan (MS, Kavraki) *Kinodynamic Motion Planning for High-dimensional Physical Systems*, January 2009.

35. Postma, Barry (MS. Nagarajaiah) *Robust Constrained Optimization Approach to control design for International Space Station Centrifuge Rotor Auto Balancing Control System,* Draper Graduate Fellow, May 2005.
36. Sullivan, Michael (MS, Nagarajaiah) *State Estimation of International Space Station Centrifuge Rotor with Incomplete Knowledge of Disturbance Inputs,* Draper Graduate Fellow, May 2005.
37. Kontsos, Antonios (MS, Spanos) *Deterministic and Random Analysis of System with Hysteresis using the Preisach Formalism,* August 2004.
38. Benzin, Kathy (MS, Miele) *Fuel Optimal Mars Transfer Trajectories*, Draper Graduate Fellow, August 2004.
39. Dutta, Sushant (MS, Ghorbel) *Dynamic Hysteresis Modeling and Applications,* May 2004.
40. Keedy, Ryan (MS, Tezduyar) *Special Methods for Fluid-Object Interactions and Space-Time Computations*, January 2004. (Southwest Research Institute- SwRI)
41. McCune, Joshua (MS, Ghorbel) *Dynamics and Control of the SPENDULAP*, May 2003.

UNDERGRADUATE RESEARCH SUPERVISED *Undergraduate students with refereed publications are indicated with (^).*

1. Juzswik, Mikaela (MECH) *Fabrication and 3-D printing of haptic devices*. Spring 2017, Fall 2017, Spring 2018.
2. Tjandra, Tiffani (MECH) *Fabrication and 3-D printing of haptic devices*. Fall 2017, Spring 2018.
3. Walling, Nikolas (MECH) *A linguistic approach to mapping spoken language to tactile cues.* Fall 2017, Spring 2018.
4. Yousef, Saad (MECH) *EMG-control of an exoskeleton: hardware integration.* Spring 2017, Fall 2017, Spring 2018.
5. ^Kim, Joel (MECH) *Evaluating skin stretch haptic feedback devices for prosthetics applications*. Fall 2016, Spring 2017, Fall 2017, Spring 2018.
6. Moser, Nick (MECH) *A haptic rehabilitation device for rats with forelimb impairment*. Fall 2016, Spring 2017, Fall 2017, Spring 2018.
7. Brady, Camilla (MECH, UT-Austin) *Mirror-tracing task as a proxy for endovascular surgery*. Summer 2017.
8. Zhou, Jijie (MECH) *Motion-based metrics for surgical skill assessment and haptic feedback*. Fall 2016, Spring 2017, Fall 2017, Spring 2018.
9. Baker, Ian (MECH) *Splint for isolating wrist movements*. Fall 2016, Spring 2017, Fall 2017.
10. Kim, Henry (MECH) *Mismatch in human performance and perception of performance*. Fall 2017.
11. ^Bucki, Nathan (MECH) *A ball and beam module for the haptic paddle*. Fall 2016, Spring 2017. (NSF Graduate Research Fellowship, PhD Program, UC Berkeley)
12. ^Kann, Claudia (MECH) *Motion capture and analysis of wrist movements in a therapeutic exoskeleton.* Fall 2015, Spring 2016, Fall 2016, Spring 2017 (NSF Graduate Research Fellowship, PhD Program, CalTech)
13. Diaz, Jeremy (MECH) *An instrumented object for evaluating the role of sensory feedback in smart prosthetics.* Spring 2015, Fall 2015
14. ^Losey, Colin (MECH) *Non-invasive BMI for movement intent detection and upper limb robotic rehabilitation.* Spring 2015, Summer 2015, Fall 2015, Spring 2016, Fall 2016, Spring 2017, Fall 2017, Spring 2018.
15. ^Frullo, John Michael (BIOE) *Evaluating the efficacy of Assist-as-Needed guidance in robotic rehabilitation.* Fall 2014, Spring 2015, Summer 2015, Fall 2015, Spring 2016
16. Brookshier, Cecelia (BIOE) *Sensory feedback for smart prosthetics,* Fall 2014, Spring 2015, Summer 2015, Fall 2015, Spring 2016
17. Elinger, Jared (MECH) *Redesign of the Rice Haptic Paddle for improved robustness and demonstration reliability,* Spring 2014, *Marionette testbed for cable actuated exoskeleton garment,* Summer 2014, Fall 2014, Spring 2015, Spring 2016 (PhD program, Georgia Institute of Technology)
18. Kim, Raymond (MECH) *Characterizing motors for wearable skin stretch haptic displays.* Spring 2015.
19. Gunasena, Dinidu (MECH, University of Southern California) *MR-compatible series-elastic modules for a wrist rehabilitation robot,* Summer 2014.
20. Diógenes, Henrique (MECH, Instituto Tecnológico de Aeronáutica - ITA) *Incipient slip feedback via skin stretch in a virtual grasp and hold task for prosthetics applications*, Summer 2014, Fall 2014.
21. ^Cera, Brian (MECH) *MR-compatible series-elastic modules for a wrist rehabilitation robot,* Spring 2013, Fall 2013, Spring 2014, Fall 2014, Spring 2015. (PhD. Program, University of California at Berkeley)

22. ^Blumenschein, Laura (MECH) *Motion Capture for Surgical Skill Assessment,* Fall 2011, Spring 2012; *Design of a mobile stand for the MAHI Exo-II*, Fall 2012, Spring 2013, Fall 2013; *Series elastic actuation for a cable driven upper limb exoskeleton,* Spring 2014, Summer 2014, Fall 2014, Spring 2015 (Century Scholar). (NSF Graduate Research Fellowship, MS Program, Rice University, PhD Program, Stanford University)
23. ^Walker, Julie (MECH) *Sensory Feedback for Smart Prosthetics,* Spring 2013, Fall 2013, Spring 2014. (NSF Graduate Research Fellowship, PhD program, Stanford University)
24. Rollo, Matthew (MECH) *Fabrication and assembly of robotic exoskeleton hardware and electronics,* Summer 2013, Fall 2013, Spring 2014.
25. ^Lee, Melissa (MECH) *Design, fabrication, and calibration of a compliant elastic element for the RiceWrist*, Fall 2012, Spring 2013, Fall 2013, Spring 2014, Fall 2014, Spring 2015 (Ph.D. Program, University of Texas - Austin)
26. Berger, Brett (MECH) *Analysis of Surgical Skill in Manual and Simulated Endovascular Procedures,* Fall 2013.
27. Nojoomi, Matthew (MECH) *Design of RiceWrist-S for Hand Exoskeleton Integration,* Fall 2013. (MS program, Johns Hopkins University)
28. Xu, Chang (Sophie) (MECH) *Velocity estimation techniques in simulation,* Fall 2012, Spring 2013.
29. Kim, Boyeon (MECH) *Analysis of Robotic Measures of Motor Impairment for SCI Rehabilitation*, Spring 2012, Summer 2012, Fall 2012, Spring 2013. (MS program, Stanford University)
30. ^Christianson, Ryan (MECH) *Fabrication and System Identification of a 1-DOF Haptic Interface for Teleoperation*, Summer 2011, *Data Analysis for Robotic Rehabilitation after Spinal Cord Injury*, Fall 2011 Spring 2012, *Sensory Feedback for Smart Prosthetics,* Summer 2012, Fall 2012, Spring 2013. (PhD program, Rice University)
31. Quincy, Ryan (MECH) Design *of RiceWrist Handle with Integrated Grasp Force Sensing*, Summer 2012.
32. Oba, Folasade (MECH, University of Pennsylvania) Re-*Design of the Rice Haptic Paddle*, Summer 2012.
33. Li, Katherine (MECH) *RiceWrist Handle and Sensory Feedback Filtering Circuit*, Summer 2012.
34. Li, Jason (MECH) *Quantitative Assessment of Vascular Catheterizations*, Summer 2012.
35. Lam, Rebecca (MECH) *Interfacing the Microsoft Kinect with the Novint Falcon Haptic Interface* (Century Scholar), Fall 2011, Spring 2012
36. ^Lee, Sangyoon (MECH) *Fabrication of Mechanical Components of MAHI Exoskeleton*. Summer 2010, Fall 2010, Spring 2011, Fall 2011, Spring 2012. *Statistical Analysis of Progressive Haptic Guidance Efficacy,* Summer 2011. (PhD program, University of Minnesota)
37. Moses, David (BIOE) *EMG Control of a Virtual Prosthetic Hand*, Fall 2011.
38. Liu, Michael (MECH) *Robotic Measures of Motor Impairment for Robotic Rehabilitation,* Summer 2011.
39. Kahn, Raquel (MECH) *Low-cost Motion Capture Systems for Human Performance Evaluation*, Summer 2011. (Schlumberger)
40. Chapman, James (MECH) *Robotic Measures of Motor Impairment for Robotic Rehabilitation,* Summer 2011.
41. ^Sullivan, Jennifer (MECH) *Robotic Measures of Motor Impairment for Robotic Rehabilitation,* Fall 2010, Spring 2011. (MS program, University of British Columbia)
42. Jo, Young Suk (MECH) *Automation of Petri Dish Handling System*. Spring 2010, Summer 2010, Fall 2010, Spring 2011. (MS Program, MIT)
43. Jang, Saeyong (MECH) *Automation of Petri Dish Handling System*. Fall 2009, Spring 2010, Summer 2010, Fall 2010. (MS Program, Stanford University)
44. ^Sung, Cynthia (MECH) *Error Augmentation to Facilitate Learning of a Visuo-Motor Task*. Fall 2009, Spring 2010, Summer 2010, Fall 2010, Spring 2011. (NSF Graduate Research Fellowship, PhD program, MIT; Assistant Professor of Mechanical Engineering, University of Pennsylvania)
45. McBride, Daniel (MECH) *Electrical Systems Development for the MAHI Exoskeleton*. Spring 2010-Spring 2011 (Century Scholar)
46. ^Pyle, Michelle (MECH) *Electrical Systems Development for the MAHI Exoskeleton*. Fall 2010 (MS Program, University of Utah)
47. Ashla, Paul (MECH) Fall 2009-Spring 2011 – *Speed-Accuracy trade-offs in 2-D ballistic movements* (Century Scholar, PhD program, Stanford University)
48. Kafka, Kathleen (BIOE, Washington University of St. Louis) *Visual Distortion via the RiceWrist for Rehabilitation after Stroke*. Summer 2010
49. Bernstein, Shai (MECH) *General Laboratory Support*. Summer 2009, Fall 2009, Spring 2010.

50. Cromer, Christopher (MECH) *Vision-based force sensing for nanorobotic manipulation*. Summer 2009
51. Davis, Katherine (MECH) *Vision-based force sensing for nanorobotic manipulation*. Summer 2009
52. Howell, Travis (MECH) *Refurbishing the MAHI Exoskeleton*. Summer 2009
53. ^Gilbert, Hunter (MECH) *Sensory Feedback for Smart Prosthetics.* Summer 2009, Fall 2009, Spring 2010. (NSF Graduate Research Fellowship, PhD program, Vanderbilt University; Assistant Professor of Mechanical Engineering, Louisiana State University)
54. ^Wong, Elaine (MECH) *Measures of Expertise for Robotic Surgery*. Summer 2009 (Brown Undergraduate Internship recipient), Spring 2010
55. McBeath, Sean (MECH) *Automation for Electron Cyromicroscopy*. Spring 2009 (Brown Undergraduate Internship recipient)
56. ^Eng, Dillon (MECH) *Haptic Feedback for Respiratory Motion Management in Radiotherapy*. Fall 2008, Spring 2009, Fall 2009, Spring 2010. *Robotic Measures of Motor Impairment for Robotic Rehabilitation,* Fall 2010, Spring 2011.
57. ^Eckenstein, Nick (MECH) *Wii as a low-cost motion capture system*. Fall 2008, Spring 2009, Summer 2009. (PhD program, University of Pennsylvania)
58. Wu, Steven (MECH) *Wii as a low-cost motion capture system*. Fall 2008.
59. Meyer, David (MECH) *Hardware for Expert-Novice Human Movement Analysis.* Spring 2008, Summer 2008, *Wii as a low-cost motion capture system*. Fall 2008 (NSF REU supplement, Brown Undergraduate Internship recipient), Spring 2009, Spring 2010. (PhD program, Northwestern University)
60. Kapusta, Ari (MECH) *Assessment of Student Learning using Haptic Paddles.* Spring 2008.
61. Powell, Dane (MECH) *Robotic-Assisted Rehabilitation for Stroke*. Spring 2008. (MS program, Rice University)
62. Mellish, Rochelle (AERO, Princeton University) *Software for Robotic Rehabilitation* – Summer 2007 (AGEP) (PhD student in Aeronautical Engineering, Purdue University)
63. Huang^, Deborah (MECH) *Just Noticeable Differences for Resonant Frequency Discrimination.* Summer 2006, Fall 2006.
64. Rhee, Dennis (MECH) *Haptic Paddles.* Summer 2006. (NSF REU supplement)
65. Chalifoux, Brandon (MECH) *Haptic Paddles – Kit fabrication and educational assessment*. Spring 2006, *Gripper Redesign for Surgical Teleoperation Test Bed* Spring 2007, *Control Software for RiceWrist* Summer 2007 (NSF Graduate Research Fellowship, Brown Undergraduate Internship recipient, PhD program, MIT)
66. Winck, Ryder (MECH) *RiceWrist Fabrication and Control*. Spring 2006, Summer 2006 (NSF REU supplement), Fall 2006 (PhD program, Georgia Tech, Post-doc at Stanford University, Assistant Professor at Rose Hulman Institute of Technology)
67. Bailey, Lauren (MECH) *User Studies for Active Haptic Assistance in Virtual Environments.* Summer 2005 (AGEP participant)
68. Moses, Kenie (MECH) *One Degree-of-Freedom Haptic Device.* Summer 2005. (AGEP participant)
69. Barth, Tyler (CS) *Nanomanipulation Test-Bed – Vision Feedback for Sensing from SEM.* Summer 2005.
70. Hale, Matthew (MECH) *Exoskeleton elbow transmission, attachment, simple haptic devices.* Summer 2005. (Baker Hughes)
71. Schlembach, Catherine (MECH) *Surgical skill assessment test beds.* Summer 2005, Fall 2005, Spring 2006.
72. ^Sledd, Alan (MECH) *Re-design of MAHI Exoskeleton,* Fall 2004, Spring 2005, Fall 2005, Spring 2006. (Brown Undergraduate Internship recipient, Tesla)
73. Leach, Derek (MECH) *LabVIEW control of a Haptic Knob,* Summer 2004, Fall 2004, Spring 2005. (Brown Undergraduate Internship recipient)
74. Schafer, Russell (MECH) *Virtual Labs for Mechanical Engineering Curriculum.* Fall 2003-Summer 2004. (co-advised)
75. Petrie, Carley (MECH) *Automation for Electroncyromicroscopy.* Fall 2004, Spring 2005.
76. Quon, Amiee (MECH) *Virtual Labs for Mechanical Engineering Curriculum.* Summer 2004. (co-advised) *Automation for Electroncyromicroscopy.* Fall 2004, Spring 2005.
77. ^Gen, Matthew (ELEC) *Active and Passive Haptic Assistance for Training in Virtual Environments.* Summer 2004, Fall 2004, Spring 2005, Summer 2005. (Brown Undergraduate Internship recipient)
78. Kimmel, Jan (MECH) *LabVIEW control of a 2-DOF Haptic Interface*, Spring 2004. (Brown Undergraduate Internship recipient)

79. Dachs, Greg (MECH) *System Identification of the Force Reflecting Hand Controller*, Spring 2004. (M.S. program, Purdue University, Intuitive Surgical)
80. Britt, John (MECH) *System Identification of the Force Reflecting Hand Controller*, Spring 2004, Summer 2004, Fall 2004, Spring 2005.
81. Wang, Daniel (MECH) *Automation for Electron Cryomicroscopy*, Spring 2004.
82. Wells, William (MECH) *LabVIEW Real-Time Control for Haptic Devices,* Spring 2004.
83. Wait, Keith (MECH) *Haptic Analogs for Simple Vehicle Dashboard Controls*, Fall 2003 (Brown Undergraduate Internship recipient) (PhD program, Vanderbilt University, GE)
84. ^Upperman, Gina (ELEC) *Effects of Haptic Interface Machine Parameters on Human Performance in a Virtual Environment*, Summer 2003. (Micron Scholar)
85. Giem, Greg (MECH) *Automation for Electron Cryomicroscopy*, Summer 2003, Fall 2003.
86. Schnuer, Samuel (MECH) *Haptic Analogs for Simple Vehicle Dashboard Controls*, Summer 2003. (Brown Undergraduate Internship recipient)
87. Wallace, Jonathan (MECH) *Control of Haptic Paddle and Haptic Knob via Matlab Real Time Workshop,* Spring 2003. (Brown Undergraduate Internship recipient)
88. ^Glassmire, John (MECH) *Automation for Electron Cryomicroscopy*, Spring 2003. *Bilateral Teleoperation of Robonaut*, Summer 2003. (M.S. program, Northwestern University)
89. Richardson, Judah (MECH) *Haptic Paddle – Design Improvements and Control via Matlab,* Fall 2002
90. Bowen, Kevin (MECH) *Laboratory Experiments for MECH 343 – Modeling Dynamic Systems*, Summer 2002. *Design of a 2-DOF Planar Haptic Interface*, Summer/Fall 2002. (Brown Undergraduate Internship recipient) (M.S. program, Rice University, Exxon Mobil)
91. Kellems, Tony (CAAM) *Comparison of Human Haptic Performance in Real and Virtual Environments*, Summer 2002. (PhD program, Rice University)
92. ^Suzuki, Atsushi (MECH) *OpenGL Based Graphics for Visual and Haptic Interaction*, Summer 2002. *Design of a 2-DOF Planar Haptic Interface*, Summer/Fall 2002, Spring 2003. *Performance Improvements for Haptic Interactions*, Summer 2003, Fall 2003. *Force Control of Biomechanical Testing Robot*, Spring 2004. (Brown Undergraduate Internship recipient, PhD program, Stanford University)
93. ^Hughes, Kelsey (MECH) *Virtual Environments to Teach Dynamic Systems*, Spring 2002. *NASA/ASEE Summer Faculty Fellowship student program*, Johnson Space Center, Summer 2002. (Brown Undergraduate Internship recipient)
94. ^Hughes, Shannon (ELEC) *Dynamic Virtual Environments for the Phantom and IE2000*, Spring 2002, Summer 2002. *Simplified Authoring of 3D Haptic Content for the WWW*, Summer 2002. (Brown Undergraduate Internship recipient). Currently Assistant Professor at University of Colorado Boulder, Electrical Engineering. (PhD program, Princeton University, Assistant Professor, Electrical Engineering, University of Colorado at Boulder)
95. Lubawy, Andrea (MECH) *Comparison of Human Haptic Performance in Real and Virtual Environments*, Spring 2002. (Brown Undergraduate Internship recipient)
96. Cuddihy, Matthew (MECH) *Virtual Environments for Performance Comparisons in Real and Simulated Environments*, Spring 2002. (Brown Undergraduate Internship recipient)

TEACHING

Most recent undergraduate teaching evaluations (46 responses, MECH 498 S18):

Effectiveness as a teacher	**1.46** / 5.00 (Rice mean: 1.7, 1 = outstanding)
Overall course quality	**1.61** / 5.00 (Rice mean: 1.81)

MECH 343 *Modeling Dynamic Systems* (Taught F2001-F2004, F2006, F2010-F2014, F2016, F2017)

Created laboratory experiments and complete curriculum for this new required undergraduate course. Implemented Bond Graphs as a method for modeling dynamic systems (usually taught only at graduate level). Students use haptic interfaces (from research lab) as part of course, interacting with virtual mechanical systems and feeling the interactions. In addition, virtual labs have been implemented to supplement material for which wet labs do not exist. Funding has been acquired to upgrade the laboratory exercises and improve cohesiveness with course content.

MECH 407/408 *Mechanical Design Projects* (Taught 2002-3, 2003-4, 2004-5, 2006-7, 2009-10, 2010-11, 2011-12)
Revamped the capstone design course and included the following features: interdisciplinary projects where students from MECH work in groups with students from ELEC, BIOE, CS, and CAAM. Increased industrial support for course so that it is financially sustainable independent of internal Rice funding. Incorporated requirements for participation in national competitions, expanding Rice's impact nationally and Internationally. Partnered with Rice Alliance to add business plan module and elevator pitch competition.

MECH 498/598 *Introduction to Robotics* (Taught S2003, S2005, S2011, S2014, S2018)
Revamped this undergraduate/graduate level course to serve as elective and introductory graduate course, primarily serving system dynamics and controls students. Students study both theoretical and applied robotics, complete several laboratory exercises, and participate in a course project. Course is now cross-listed in ELEC and Computer Science.

MECH 488/588 *Design of Mechatronic Systems* (Taught S2004, S2006, S2010, S2013, S2015, S2017)
New undergraduate/graduate level course developed to serve as elective and introductory graduate course, primarily serving system dynamics and controls students. Students participate in several hands-on projects that focus on the integration of mechanical and electrical systems and computer control. In addition, students complete a course project. Modified in 2013 to incorporate a healthcare theme.

MECH 420 *Fundamentals of Control Systems* (Taught S2008, S2009)
Converted course notes to tablet PC format. Converted one laboratory station to use National Instruments LabVIEW software.

MECH 401 *Mechanical Design Applications* (Taught F2001, F2002, S2003, S2004)
Converted course notes to tablet PC format.

Support for other courses:

ENGI 120 *Intro to Engineering Design*	(Faculty mentor, 1-2 teams per term, F2013, F2014, S2018)
ENGI 128 *Intro to Engineering Systems*	(Instructor for two lectures per term, F2010, F2011)
MECH 407/408 *Mechanical Design Projects*	(Faculty mentor for 1 or 2 teams annually since joining Rice, unless on leave)

SERVICE

UNIVERSITY SERVICE

UNIVERSITY AND SCHOOL OF ENGINEERING

2017-present	Special Advisor to the Provost on Health-Related Research and Educational Initiatives
2014-present	Institute of Biosciences and Bioengineering (IBB) Steering Committee, member
2013-present	Scientia, member
2012-2017	Research Administration Advisory Group, member
2003-present	Rice University Marshals Committee (Head Graduate Marshal, 2009-2015, Chief Marshal, 2016-present)
2010-2017	Rice Center for Engineering Leadership, Internal Advisory Committee
2012-2014	Center for Teaching Excellence Fellow
2012-present	Office of Faculty Development: Faculty Advisor Board member (2013-present), Director search committee member (2012)
2013	Rice University Center for Teaching Excellence Brown-Bag Series for graduate student teaching certification, invited speaker, "Learning vs. Teaching Styles, Active Learning Techniques, Writing & Using Learning Objectives - Part 1and Part 2," with Professor James Young (January 25 and February 8, 2013)
2012	Rice 2032 Faculty Lunch Discussion on Research (April 23, 2012)

2012	Spoke at workshop for graduate students on Choosing the Right Advisor (April 5, 2012)
2012	Office of Faculty Development - Organized lunch discussion for Assistant Professors on Strategies for Managing a Sustainably Funded Research Program (February 14, 2012)
2012	ELA (Empowering Leadership Alliance) Faculty Mentor for underrepresented minority (URM) Rice students in math, science, and engineering fields at the undergraduate level
2011-2012	Ad Hoc Committee on the Status of the Faculty at Rice University, member
2011	Office of Faculty Development - organized luncheon discussion for Assistant Professors on Managing Your Research Program and Personnel (October 4, 2011)
2011	Rice NSF-ADVANCE organized university-wide workshop for Associate Professors on Promotion to Full Professor (March 8, 2011)
2011	Rice NSF-ADVANCE post-doc speed mentoring
2009-2011	Rice Center for Civic Engagement Reviewer for Civic Research Projects (annual)
2008-2011	Co-Chair, Rice NSF-ADVANCE Recruitment Committee
2006-2007	School of Engineering Steering Committee for Engineering Education, Rice Engineering Education Forum (REEF)
2008-present	Rice University School of Engineering Design Committee
2006	Rice University Packard Fellowship Nomination Committee
2006	Rice NSF-ADVANCE panel for Negotiating the Ideal Faculty Position Workshop
2006-2011	Rice NSF-ADVANCE Leadership team and Recruitment Sub-Committee
2008	Rice University Child Care Facility Transition Committee
2005-2007	Rice University Presidential Committee on Faculty Women
2004	Dean of George R. Brown School of Engineering Search Committee
2004-2008	Cain Project in Eng and Professional Communication Faculty Advisory Committee
2002-2014	Faculty Associate, Hanszen College (Distinguished Faculty Associate 2001-2002, 2007-2008, 2008-2009)
2003-2010	Owl Weekend Engineering Panel and Lab Tours

MECHANICAL ENGINEERING DEPARTMENT

2016-present	Director of Graduate Studies
2009-2014	ABET Committee (Chair)
2006-2010,	Director of Undergraduate Studies
2012-2014	Director of Undergraduate Studies
2001-2010	Curricular and Advising Matters Committee (Chair, 2006-2010)
2007-2010	Department Advancement Committee
2006-2007	Mech Eng and Mat'l Science Robotics Faculty Search Committee Co-Chair
2005-2006	Civil and Environmental Engineering Faculty Search Committee Outside Member
2002-2007	ABET Committee
2004-2006	Graduate Students Committee
2002-2006	Graduate Studies Problem Resolution Committee
2002	O-Week advising

OUTREACH

2013-2015, 2018	Annual Laboratory tours for Harvard Elementary School 5th graders (~100 students) (Feb 1, 2013; Jan 31, 2014, Jan 30, 2015, Jan 26, 2018)
2012	Laboratory tours for Rice Emerging Scholars Program (RESP) (July 30, 2012)
2012	Organized robotics lab tours for 60 high school students from DeBakey High School (Houston ISD) (February 9-10, 2012)
2011	Mission Connect Symposium poster judge
2005-2015	Presentation to Milby High School, YES Academy, and IBB students visiting Rice University and lab tours
2002, 2004-06, 2008-2015	Presentation to the South Texas Students visiting Rice University and lab tours
2010	Lab tours for 30 high school students from Austin, TX
2004-2009	VISION Engineering Weekend Engineering Panel, serve on panel and organize lab tours for annual event

2004-2009	Panel Speaker, lab tours for annual CS-CAMP girls camp for computer science, Rice University
2003-2005, 2013	Mentor Lunch Special Guest, University of Houston's annual GRADE (Girls Reaching and Demonstrating Excellence) Camp for girls interested in learning about careers in engineering
2002	Organized campus visit and lab tours for 30 students at Booker T. Washington High School for the Engineering Professions

PROFESSIONAL SERVICE

EDITORIAL WORK

IEEE Transactions on Robotics, Associate Editor (2017-present)
ACM Transactions on Human Robot Interaction, Senior Editor (2017-present)
IEEE World Haptics Conference Editorial Board member (2018-present)
ASME Journal of Mechanisms and Robotics Associate Editor (2014-2017)
IEEE/ASME Transactions on Mechatronics Associate Editor (2009-2013)
IEEE Transactions on Haptics Associate Editor (2008-2010)
IEEE Transactions on Haptics Special Issue on Haptics and Rehabilitation and Neural Engineering Associate Editor (2012-2014)
IEEE IROS 2012 Conference Review Board, Editor (1 of 15, overseeing 12-15 associate editors and 120-150 papers) (2012)
ASME Dynamic Systems and Control Division Conference Editorial Board member, supporting the Dynamic Systems and Controls Conference and the Automatic Control Conference (2008-2011)
ASME Journal of Computing Sciences and Information in Engineering Special Issues on Haptics, Tactile and Multimodal Interfaces, Co-Editor, December 2008 and February 2009.
International Journal of Robotics Research (IJRR) Co-editor of Special Section on Machines for Human Assistance and Augmentation, February 2008.
ASME Journal of Dynamic Systems, Measurement, and Control Co-editor of Special Issue on Novel Robotics and Control, March 2006.

PROFESSIONAL ACTIVITIES

Co-Chair, ASME Robotics Public Policy Task Force (RPPTF) (2017-present)
Member, National Instruments (NI) Elite Educator Network
Member, Italian Institute of Technology (IIT) Standing Committee of External Evaluators for Robotics (2012-present)
Invited Contributor, "A Roadmap for U.S. Robotics: From Internet to Robotics, 2013 edition," based on the workshop entitled "A Research Roadmap for Medical and Healthcare Robotics", held at the University of Southern California, July 23, 2012, sponsored by the Computing Community Consortium (CCC), NSF, and the USC Virterbi School of Engineering
Member, External Advisory Committee, Vanderbilt University Department of Mechanical Engineering (2010-2018)
IEEE Transactions on Haptics Search Committee for Editor in Chief (2012-2013)
Chair, IEEE Technical Committee on Haptics (2010-2012)
Co-chair, IEEE Technical Committee on Haptics (2008-2010)
Chair, ASME Dynamic Systems and Control Division Robotics Technical Committee (2008-10)
Invited Contributor, "A Roadmap for U.S. Robotics: From Internet to Robotics, 2009 edition," based on the workshop entitled "A Research Roadmap for Medical and Healthcare Robotics", held June 19-20, 2008 in Arlington, VA. The workshop was sponsored by the Computing Community Consortium (CCC), part of the Computing Research Association (CRA), through a grant from the U.S. National Science Foundation (NSF)
Co-chair, ASME Dynamic Systems and Control Division Robotics Technical Committee (2005-2008)
Member, Program Committee, International Symposium on Haptics and Teleoperation (HAPTICS) (2003-2008, 2012-present)
Sigma Xi, Rice/TMC Chapter (President Elect 2002-2003, President 2003-2004, Board of Directors, 2004-2006, member 2002-present)

CONFERENCE AND SYMPOSIUM ORGANIZATION

2020 IEEE International Conference on Intelligent Robots and Systems (IROS) Program Chair
2018 IEEE HAPTICS Symposium, Award Committee member
Eurohaptics Conference, Award Committee member, Session Chair
2017 ASME Dynamic Systems and Controls Conference (DSCC), Program Chair
International Symposium on Robotics Research (ISRR), Program Committee
IEEE World Haptics Conference, Awards Committee member
2016 IEEE HAPTICS Symposium, Awards Chair
IEEE International Conference on Intelligent Robots and Systems (IROS) Program Co-Chair, Doctoral Consortium Chair
2015 IEEE International Conference on Rehabilitation Robotics (ICORR) Scientific Committee
IEEE ICRA, Workshop Organizer, "Challenges and Strategies in the Design and Control of Upper Extremity Exoskeletons"
IEEE ICRA, Special Session Organizer "Conference Spotlight: 2014 HAPTICS"
IEEE ICRA, Session Chair
2014 IEEE HAPTICS Symposium, Chair
Eurohaptics, Workshop Organizer, "Haptics in Rehabilitation, Prosthetics and Neural Engineering: Robotic Aspects and Neuro-scientific Principles"
IEEE International Conference on Intelligent Robots and Systems (IROS) Best Paper Award Committee
2013 ASME Dynamic Systems and Controls Conference (DSCC) Best Conference Paper (Theory and Application) Selection Committee
ASME Dynamic Systems and Controls Conference (DSCC), Session Chair
IEEE International Conference on Rehabilitation Robotics (ICORR), Workshop Organizer on "Design and Control of Robotic Exoskeletons with Compliant Joints and Actuation Systems"
International Workshop on Clinical BMI Systems, Executive Committee
2012 IEEE HAPTICS Symposium, Co-Chair
2011 ASME Dynamic Systems and Controls Conference (DSCC), Program Chair
IEEE International Conference on Intelligent Robots and Systems (IROS) Special Symposium Organizer (Haptics)
IEEE World Haptics Conference, Session Chair
IEEE Engineering in Medicine and Biology Conference, Session Chair
IEEE Engineering in Medicine and Biology Conference, Workshop co-organizer on Rehabilitation and Therapeutic Robotics for Upper and Lower Extremity
2010 IEEE Conference on Decision and Control, Publicity Chair
ASME Dynamic Systems and Controls Conference (DSCC), Students and Young Members Chair
ASME Dynamic Systems and Controls Conference (DSCC), Associate Editor
ASME Dynamic Systems and Controls Conference (DSCC), Workshop organizer (Rehabilitation and Therapeutic Robotics)
IEEE Robotics and Automation Society Conference Editorial Board, ICRA 2010, Associate Editor
Advanced Intelligent Mechatronics (AIM) 2010, Program Co-Chair, Session Chair
IEEE HAPTICS Symposium, Demo Awards Committee, Session Chair
2009 RSS Robotics Science and Systems Conference, Program Committee
ASME Dynamic Systems and Control Conference (DSCC), Program Committee
2008 15th IEEE HAPTICS (International Symposium on Haptics and Teleoperation), Awards Committee
ASME Dynamic Systems and Control Conference, Program Committee
2007 ASME International Mechanical Engineering Congress and Exposition Symposium organizer "Advances in Robot Dynamics and Control"
2006 14th IEEE HAPTICS International Symposium on Haptics and Teleoperation Organizing Committee, Awards Committee
US-UK Workshop on Cognitive Robotics (NSF Funded workshop), US Discussion Leader for Human-machine interaction, Reading, UK, August 16-18, 2006
2005 13th IEEE HAPTICS International Symposium on Haptics and Teleoperation Organizing Committee
World Haptics Symposium Program Committee
14th IEEE International Workshop on Robot and Human Interactive Communication (RO-MAN 2005) Nashville, TN, USA August 13-15, 2005, Technical Program Committee

22nd Annual Houston Conference on Biomedical Engineering Research, Program Committee
ASME International Mechanical Engineering Congress and Exposition, Session Organizer, "Haptics and Teleoperation"

2004 12th IEEE HAPTICS International Symposium on Haptics and Teleoperation organizing committee
ASME International Mechanical Engineering Congress and Exposition, Special Session Organizer, "Telerobotics, Haptics, and Human Robot Collaboration"

2003 11th IEEE HAPTICS International Symposium on Haptics and Teleoperation Local Arrangements Chair and organizing committee
ASME International Mechanical Engineering Congress and Exposition, Special Session Organizer, "Telerobotics, Haptics, and Human Robot Collaboration"

REVIEWING AND REFEREEING ACTIVITIES

Manuscript review
ASME Journal of Dynamic Systems, Measurement, and Control
ASME Transactions, Journal of Computing and Information Science in Engineering
IEEE/ASME Transactions on Mechatronics
IEEE Transactions on Robotics and Automation (split to 2 journals in 2005)
IEEE Transactions on Robotics
IEEE Robotics and Automation Magazine
IEEE Robotics and Automation Letters
IEEE Transactions on Control Systems Technology
IEEE Computer Graphics and Applications
IEEE Transactions on Visualization and Computer Graphics
IEEE Transactions on Neural Systems & Rehabilitation Engineering
IEEE Transactions on Systems, Man, and Cybernetics (Part A)
IEEE Transactions on Human-Machine Systems
IEEE Transactions on Industrial Electronics
ASEE Advances in Engineering Education
International Journal of Robotics Research (IJRR)
Advanced Robotics
Mechatronics
Robotica
ACM Transactions on Applied Perception
Haptics-e: The Electronic Journal of Haptics Research
Presence: Teleoperators and Virtual Environments
Visual Computer
Applied Bionics and Biomechanics
Cognitive Science
Assistive Technology
Journal of Neuroscience
Journal of Neurophysiology
PLOS-One
Psychonomic Bulletin & Review
Journal of Science Education and Technology

Peer-review conference proceedings review
ASME International Mechanical Engineering Congress and Exposition (IMECE)
International Symposium on Haptics and Teleoperation (HAPTICS)
American Control Conference (ACC)
IEEE Conference on Decision and Control (CDC)
IEEE Workshop Robot and Human Interactive Communication (RO-MAN)
IEEE International Conference on Robotics and Automation (ICRA)
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
ISRR (International Symposium on Robotics Research)
Eurohaptics
Human-Robot Interaction

UIST

Textbook review
Mechanical Engineering Design, 7th edition, by Shigley, Mischke, and Budynas

Proposal review
National Institutes of Health (2011, 2014, 2016)
National Science Foundation Division of Undergraduate Education (2 panels, 2005)
National Science Foundation Division of Computer and Information Science and Engineering, Information and Intelligent Systems (2 panels, 2005; 2006; 2011; 2 panels, 2012; ad-hoc review, 2012)
National Science Foundation Division of Civil, Mechanical, and Manufacturing Innovation (2009, 2011)
National Science Foundation Division of Engineering, Civil and Mechanical Systems (2006)
National Science Foundation Division of Computer and Information Science and Engineering, Information and Intelligent Systems CAREER Awards
Canada Foundation for Innovation (CFI) (2006)
Jeffress Memorial Trust, State of Virginia (2002)
Science Foundation Ireland (2004)
Canada NSERC (2006, 2011, 2013)
NIDRR RERC (2008)
Swiss National Science Foundation (SNSF) Div. Mathematics, Physical and Engineering Sciences (2011, 2013)
AAAS Panel Review (2010)
Netherlands Organisation for Scientific Research (NWO) (2014)

PROFESSIONAL SOCIETIES

Senior Member, Institute of Electrical and Electronics Engineers (IEEE) (Student Member, 1999; Member, 2003; Senior Member, 2013-present)
Fellow, American Society of Mechanical Engineers (ASME) (Student member, 1993; Member, 2001; Fellow, 2014)
Member, American Society of Engineering Education (ASEE) (2003-present)
Member, American Institute of Aeronautics and Astronautics (AIAA) (2003-2004)

PARTICIPATION IN WORKSHOPS AND PROFESSIONAL DEVELOPMENT

1. NASA Blue Sky Meeting on "Exercise Technologies and Methods for Exploration Missions," Institute for Human and Machine Cognition (IHMC), Pensacola FL, February 10-11, 2015 (by invitation).
2. NSBRI Symposium on "Designing for the Future: Remote Rehabilitation and Integration of New Technologies in Spaceflight," Houston, TX, May 6-7, 2014 (by invitation)
3. RiceADVANCE Associate Professor Workshop, Houston, TX, March 8, 2011.
4. RiceLeaders, Cohort 4, Houston TX 2008-2009 (by invitation)
5. CCC/ACM Medical and Healthcare Robotics Workshop participant, Arlington, VA, June 19-20, 2008 (by invitation).
6. RiceADVANCE Faculty Career Success Workshop, Houston, TX, April 19, 2008.
7. National Academies Keck Futures Initiative (NAKFI) Smart Prosthetics Conference, Irvine, California, November 8-11, 2006. (invited participant)
8. National Effective Teaching Institute (NETI), Chicago, Illinois, June 15-17, 2006. (http://www.ncsu.edu/felder-public/NETI.html)
9. 2005 National Academy of Engineering (NAE) Frontiers of Engineering (FOE) symposium, Niskayuna, New York, September 22-24, 2005 (by invitation).
10. "WEE 03 - Workshop for the Advancement and Retention of Underrepresented and Minority Engineering Educators", sponsored by the Divisions of Civil & Mechanical Systems (CMS) of the NSF Directorate for Engineering, September 22-24, 2003 (by invitation).
11. Share the Future IV Workshop - Career Development for New Faculty, Sponsored by SUCCEED and held in Tempe, AZ, March 16, 2003 (by invitation).
12. "How to Succeed in Academia: Profiles of Successful Women Academicians", Workshop hosted by the University of Texas Health Science Center at Houston Associate of Women Faculty, January 31, 2003.

13. "NSF Grantsmanship Workshop (focusing on NSF's educational progra Techniques for Active User Engagement in Robotic Rehabilitation ms)", Workshop hosted by the Texas Engineering and Technical Consortium (TETC), December 13, 2002.

ADDITIONAL INFORMATION

Certification: Engineer-in-Training (state of Indiana)

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Web page: http://mech.rice.edu/users/omalleym, Laboratory web page: http://mahilab.rice.edu