

# Jonathan W. Hurst

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## Contact Information

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and Manufacturing Engineering  
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## Current Position

Professor  
Collaborative Robotics and Intelligent Systems Institute  
Oregon State University, Corvallis, Oregon

Chief Technology Officer  
Agility Robotics, Albany, Oregon

## Education

**Carnegie Mellon University**, Pittsburgh, Pennsylvania USA

Ph.D., Robotics, August 12, 2008

Dissertation Topic: "The Role of Compliance in Legged Locomotion."

Advisor: Jessica K. Hodgins

Thesis Committee: Matthew T. Mason

Alfred A. Rizzi

J. Kenneth Salisbury

M.S., Robotics, May 2004

Advisor: Alfred A. Rizzi

B.S., Mechanical Engineering, Minor in Robotics, May 2001

## Journal Publications

Siavash Rezazadeh and Jonathan Hurst, "Control of ATRIAS in three dimensions: Walking as a forced-oscillation problem," *The International Journal of Robotics Research (IJRR)*, May 2020

Jesse J. Rond, Michael C. Cardani, Matthew I. Campbell, Jonathan W. Hurst, "Mitigating Peak Impact Forces by Customizing the Passive Foot Dynamics of Legged Robots," *ASME Journal of Mechanisms and Robotics*, May 2020.

Siavash Rezazadeh, Andy Abate, Ross L. Hatton, and Jonathan Hurst, "Robot Leg Design: A Constructive Framework," *IEEE Access*, December 2018, Vol. 6 54369-54387

Christian Hubicki, Andy Abate, Patrick Clary, Siavash Rezazadeh, Mikhail Jones, Andrew Peekema, Johnathan Van Why, Ryan Domres, Albert Wu, William Martin, Hartmut Geyer, and Jonathan Hurst, "Walking and Running with Passive Compliance: Lessons from Engineering a Live Demonstration of the ATRIAS Biped," *IEEE Robotics and Automation Magazine*, May 2018 [**Best Paper Award**]

Christian Hubicki, Jesse Grimes, Mikhail Jones, Daniel Renjewski, Alexander Spröewitz, Andy Abate, and Jonathan Hurst, "ATRIAS: Design and Validation of a Tether-free 3D-capable Spring-Mass Bipedal Robot," *International Journal of Robotics Research*, 2016, Vol. 35(12) 1497-1521

Daniel Renjewski, Alexander Sproewitz, Andrew Peekema, Mikhail Jones, and Jonathan W. Hurst, "Exciting Engineered Passive Dynamics in a Bipedal Robot," *IEEE Transactions on Robotics*, Vol. 31, Issue 5, October 2015

Aleksandra V. Birn-Jeffery\*, Christian M. Hubicki\*, Yvonne Blum, Daniel Renjewski, Jonathan W. Hurst, and Monica A. Daley, “Don’t Break a Leg: Running Birds from Quail to Ostrich Prioritise Leg Safety and Economy on Uneven Terrain,” *Journal of Experimental Biology*, 217, 3786-3796. Featured Article. \*Authors contributed equally to the manuscript. Article is available open-access at <http://jeb.biologists.org/>

Yvonne Blum, Hamid R. Vejdani, Aleksandra V. Birn-Jeffery, Christian M. Hubicki, Jonathan W. Hurst, and Monica A. Daley, “Swing-Leg Trajectory of Running Guinea Fowl Suggests Task-Level Priority of Force Regulation Rather than Disturbance Rejection,” *PlosOne*, June 30 2014, DOI: 10.1371/journal.pone.0100399 The final publication is available at <http://www.plosone.org>

H.R. Vejdani, Y. Blum, M.A. Daley, and J.W. Hurst, “Bio-inspired swing leg control for spring-mass robots running on ground with unexpected height disturbance,” *Bioinspiration & Biomimetics* (DOI: 10.1088/1748-3182/8/4/046006), 2013

D. Koepf and J.W. Hurst, “Impulse Control for Planar Spring-Mass Running,” *Journal of Intelligent and Robotic Systems* (DOI: 10.1007/s10846-013-9877-8), 2013

A. Ramezani, J.W. Hurst, J.W. Grizzle, “Performance Analysis and Feedback Control of ATRIAS, A 3D Bipedal Robot,” *Journal of Dynamic Systems, Measurement and Control*, accepted May 2013

K. Kemper, H. R. Vejdani, B. Piercy, J. Hurst, “Optimal Passive Dynamics for Physical Interaction: Catching a Mass,” *Actuators* 2013, 2(2), 45-58, May 2013

J.S. Colett and J.W. Hurst, “Artificial Restraint Systems for Walking and Running Robots: An Overview,” *International Journal of Humanoid Robotics*, Vol. 09, Issue 01, March 2012.

J.W. Hurst, “The Electric Cable Differential Leg: A Novel Design Approach for Walking and Running,” *International Journal of Humanoid Robotics*, Vol. 8, Issue 2, 301-321, June 2011.

H.W. Park, K. Sreenath, J.W. Hurst, J.W. Grizzle, “Identification of a Bipedal Robot with a Compliant Drivetrain: Parameter Estimation for Control Design,” *IEEE Control Systems Magazine*, Vol 31, Issue 2, April 2011 (cover story).

J.W. Hurst, J.E. Chestnutt, and A.A. Rizzi, “The Actuator with Mechanically Adjustable Series Compliance,” *IEEE Transactions on Robotics*, Vol. 26, No. 4, September 2010.

J.W. Hurst and A.A. Rizzi, “Series Compliance for an Efficient Running Gait: Lessons Learned from the Electric Cable Differential Leg,” *IEEE Robotics and Automation Magazine*, Special Issue: “Adaptable Compliance / Variable stiffness for Robotic Applications,” Vol. 15, Issue 3, September 2008, pages 42-51.

**Book Chapters** Kevin Green and Jonathan Hurst, chapter on “Series Elastic Actuators,” contributed to “*Encyclopedia of Robotics*,” edited by Marcelo H. Ang, Oussama Khatib, and Bruno Siciliano, published by Springer; online December 8 2020, ISBN 978-3-662-43771-1

**Other Notable Publications** Jonathan Hurst, Building Robots That Can Go Where We Go, *IEEE Spectrum Magazine* Cover Article, March 2019, <https://spectrum.ieee.org/robotics/humanoids/building-robots-that-can-go-where-we-go>

**Conference Publications** Jonah Siekmann, Srikar Valluri, Jeremy Dao, Lorenzo Bermillo, Helei Duan, Alan Fern, Jonathan Hurst, “Learning Memory-Based Control for Human-Scale Bipedal Locomotion,” (Accepted) *Robotics Science and Systems (RSS)*, July 2020

Kevin Green, Ross L Hatton, Jonathan Hurst, “Planning for the Unexpected: Explicitly Optimizing Motions for Ground Uncertainty in Running,” IEEE International Conference on Robotics and Automation (ICRA), May 2020

Mike Hector, Kevin Green, Burak Sencer, Jonathan Hurst, “Ankle Torque During Mid-Stance Does Not Lower Energy Requirements of Steady Gaits,” IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), November 2019

Jesse J. Rond , Michael C. Cardani , Matthew I. Campbell , Jonathan W. Hurst, “Eliminating Peak Impact Forces by Customizing the Passive Foot Dynamics of Legged Robots,” ASME International Design Engineering Technical Conferences and Computers and Information in Engineering Conference, August 2019

Zhaoming Xie, Patrick Clary, Jeremy Dao, Pedro Morais, Jonathan Hurst, and Michiel van de Panne, “Learning Locomotion Skills for Cassie: Iterative Design and Sim-to-Real” Conference on Reinforcement Learning (CoRL), October 2019.

Zhaoming Xie, Glen Berseth, Patrick Clary, Jonathan Hurst, and Michiel van de Panne, “Feedback Control for Cassie with Deep Reinforcement Learning,” IEEE International Conference on Intelligent Robots and Systems (IROS), October 2018.

Taylor Apgar, Patrick Clary, Kevin Green, Alan Fern, and Jonathan Hurst, “Fast Online Trajectory Optimization for the Bipedal Robot Cassie,” Robotics Science and Systems (RSS), June 2018.

Patrick Clary, Pedro Morais, Alan Fern, and Jonathan Hurst, ”Monte-Carlo Planning for Agile Legged Locomotion,” International Conference on Automated Planning and Scheduling (ICAPS), June 2018.

Andy Abate, Jonathan W. Hurst, and Ross L. Hatton, “Mechanical Antagonism in Legged Robots,” Robotics Science and Systems (RSS), June 2016

Siavash Rezazadeh, Christian Hubicki, Mikhail Jones, Andrew Peekema, Johnathan Van Why, Andy Abate and Jonathan W. Hurst, “Spring-mass Walking with ATRIAS in 3D: Robust Gait Control Spanning Zero to 4.3 KPH on a Heavily Underactuated Bipedal Robot,” ASME Dynamic Systems and Control Conference (DSCC), October 2015

Hamid Vejdani, Albert Wu, Hartmut Geyer, and Jonathan W. Hurst, “Touch-down Angle Control for Spring-Mass Walking,” IEEE International Conference on Robotics and Automation (ICRA), May 2015

Siavash Rezazadeh and Jonathan W. Hurst, “Toward Step-by-Step Synthesis of Stable Gaits for Underactuated Compliant Legged Robots,” IEEE International Conference on Robotics and Automation (ICRA), May 2015

Christian Hubicki, Mikhail Jones, Monica A. Daley, Jonathan W. Hurst, “Do Limit Cycles Matter in the Long Run? Stable Orbits and Sliding-Mass Dynamics Emerge in Task-Optimal Locomotion,” IEEE International Conference on Robotics and Automation (ICRA), May 2015

Ayonga Hereid, Christian Hubicki, Eric Cousineau, Jonathan W. Hurst, and Aaron D. Ames, “Hybrid Zero Dynamics based Multiple Shooting Optimization with Applications to Robotic Walking,” IEEE International Conference on Robotics and Automation (ICRA), May 2015

Siavash Rezazadeh and Jonathan W. Hurst, “On The Optimal Selection of Motors and Transmissions for Electromechanical and Robotic Systems,” IEEE International Conference on Intelligent Robots

and Systems (IROS) (10.1109/IROS.2014.6943215), Sept. 2014.

Behnam Dadashzadeh, Hamid R. Vejdani, and Jonathan Hurst, “From Template to Anchor: A Novel Control Strategy for Spring-Mass Running of Bipedal Robots,” IEEE International Conference on Intelligent Robots and Systems (IROS) (10.1109/IROS.2014.6942912), Sept. 2014.

A. Hereid, S. Kolathaya, M.S. Jones, J.R. Van Why, J.W. Hurst, and A.D. Ames, “Dynamic Multi-Domain Bipedal Walking with ATRIAS through SLIP based Human-Inspired Control,” Hybrid Systems and Control Conference (HSCC) (DOI: 10.1145/2562059.2562143), April 2014

A. Peekema, D. Renjewski and J.W. Hurst, “Open-Source Real-Time Robot Operation and Control System for Highly Dynamic, Modular Machines,” ASME International Design Engineering Technical (IDET), August 2013.

H.R. Vejdani, J.W. Hurst, “Optimal Passive Dynamics for Physical Interaction: Throwing a Mass,” IEEE Conference on Robotics and Automation (ICRA), May 2013

J.A. Grimes and J.W. Hurst, “The Design of ATRIAS 1.0: A Unique Monopod, Hopping Robot” (**Awarded Best Technical Paper**), International Conference on Climbing and Walking Robots (CLAWAR), July 2012.

C.M. Hubicki and J.W. Hurst, “Running on Soft Ground: Simple, Energy-Optimal Disturbance Rejection,” International Conference on Climbing and Walking Robots (CLAWAR), July 2012.

H.R. Vejdani and J.W. Hurst, “Swing Leg Control for Actuated Spring-Mass Robots,” International Conference on Climbing and Walking Robots (CLAWAR), July 2012.

M.S. Jones and J.W. Hurst, “Effects of Leg Configuration on Running and Walking Robots,” International Conference on Climbing and Walking Robots (CLAWAR), July 2012.

D. Koepl, J.W. Hurst, “Force Control for Planar Spring-Mass Running,” IEEE International Conference on Intelligent Robots and Systems, September 2011.

D. Koepl, K. Kemper, and J.W. Hurst, “Force Control For Spring-Mass Running and Walking,” IEEE Conference on Advanced Intelligent Mechatronics, July, 2010.

Kevin Kemper, Devin Koepl, and J.W. Hurst, “Optimal Passive Dynamics for Torque/Force Control,” IEEE Conference on Robotics and Automation, May 2010.

J.W. Grizzle, J. Hurst, B. Morris, H.W. Park, K. Sreenath, “MABEL, A New Robotic Bipedal Walker and Runner,” IEEE American Control Conference, June, 2009.

J.W. Hurst, B. Morris, J. Chestnutt, and A. Rizzi, “A Policy for Open-Loop Attenuation of Disturbance Effects Caused by Uncertain Ground Properties in Running,” IEEE Conference on Robotics and Automation, April, 2007.

J.W. Hurst, J. Chestnutt, and A. Rizzi, “Design and Philosophy of the BiMASC, a Highly Dynamic Biped,” IEEE Conference on Robotics and Automation, April, 2007.

J.W. Hurst, Daan Hobbelen, and A. Rizzi, “Series Elastic Actuation: Potential and Pitfalls,” IEEE Workshop on Morphology, Control, and Passive Dynamics, International Conference on Intelligent Robots and Systems, 2005.

J.W. Hurst and A. Rizzi, “Physically Variable Compliance in Running,” International Conference

on Climbing and Walking Robots, Springer-Verlag, www.springeronline.com, September, 2004.

J.W. Hurst, J. Chestnutt, and A. Rizzi, “An Actuator with Physically Variable Stiffness for Highly Dynamic Legged Locomotion,” IEEE Conference on Robotics and Automation, May, 2004. Detailed version available as technical report CMU-RI-TR-04-24.

**Technical Reports** J.W. Hurst, J. Chestnutt, and A. Rizzi, “An Actuator with Mechanically Adjustable Series Compliance,” tech. report CMU-RI-TR-04-24, Robotics Institute, Carnegie Mellon University, April, 2004.

J.W. Hurst, J.W. Grizzle, H. Geyer, DARPA M3 program quarterly and annual reports, Q1-Q10, beginning April 2012 and ongoing

**Patents**

PCT/US20/45611, “A Transmission, and Related Systems and Methods,” filed 8/10/2020

U.S. Design Patent Number D888,120, “Bipedal Robot” June 23, 2020

SN 62/845,194, “Systems and Methods for Mixed-Use Delivery of People and Packages Using Autonomous Vehicles and Machines,” filed 5/8/2019

SN 62/845/220, “Method and Apparatus for Releasably Securing a Personal Package Delivery Device in a Delivery Vehicle,” filed 5/8/2019

SN 62/810,299, “Methods of Eliminating Peak Impact Forces of Legged Robots,” filed 2/25/2019

U.S. Patent No. 9,789,920 “Apparatus and Method for Energy Regulation and Leg Control for Spring-Mass Walking Machine,” Oct. 17, 2017

U.S. Patent No. 8,914,151, “Apparatus and Method for Legged Locomotion Integrating Passive Dynamics With Active Force Control,” Dec. 16, 2014

U.S. Patent No. 10,189,519; “Leg Configuration for Spring-Mass Legged Locomotion,” Jan. 29, 2019

**Invited Presentations**

**University of Washington Robotics Colloquium**, Oct 20 2020, <https://youtu.be/QsvVM1NKQSQ>

**International Conference on Robotics and Automation (ICRA) workshop on Real-World Deployment of Legged Robots**, June 2020, <https://youtu.be/SxSJjfNvHWc>

**Amazon Botapalooza**, 1st annual internal Amazon Robotics focus, 900+ local attendees including senior Amazon leadership, thousands via livestream; One of two invited external speakers, June 2019.

**International Conference on Robotics and Automation (ICRA) workshop on Learning Legged Locomotion**, May 2019

**Presentation to Bill Gates, via Intentional Futures Organization**, January 2019

**Robotics: Science and Systems**, Workshop on Challenges in Dynamic Legged Locomotion, July 2017

**Amazon MARS (Machine-Learning, (Home) Automation, Robotics and Space Exploration) Conference**, March 2017

**Carnegie Mellon University, Robotics Institute Seminar**, April 2016

**Robotics Science and Systems**, Workshop on Dynamic Locomotion, July 12-13, 2014

**IEEE International Conference on Intelligent Robots and Systems (IROS)**, Workshop on Actuation Systems, Sept. 14-18, 2014

**Georgia Institute of Technology, Robotics and Intelligent Machines Seminar**, April 2013, <http://robotics.gatech.edu/news/seminars>

**Live Demonstrations of ATRIAS monopod and biped:**

- DARPA Robotics Challenge, Pomona, California, May 2015; ATRIAS walked and ran.
- Dynamic Walking Conference, Pensacola, Florida, May 2012
- CLAWAR conference, Baltimore, MD, July 2012
- Popular Mechanics Breakthrough Award, New York, NY, October, 2012.

**IEEE Conference on Robotics and Automation:**

- Workshop on “Variable Stiffness Actuators moving the Robots of Tomorrow,” May 2012
- Workshop on “Achieving Robust, Compliant, Interactive Humanoid Robots via Active Force Control,” May 2010
- Workshop on “New Variable Impedance Actuators for the Next Generation of Robots,” May 2010

**DARPA PI meetings, M3 Program:**

- February 2011 Kickoff Meeting, October 2011, January 2012, August 2012, April 2014

**Dynamic Walking Meetings:**

- Institute for Human and Machine Cognition, Pensacola, Florida, June 2012
- University of Jena, Germany, June 2011
- Massachusetts Institute of Technology, Boston, MA, 2010
- Simon Frasier University, Vancouver, CA 2009
- Mariehamn Island, Finland, June 2007
- University of Michigan, June 2006
- Carnegie Mellon University, June 2005
- University of Michigan, June 2004

**Current Research Funding** Intel Corp. gift funding, \$85,000 to support ongoing collaboration

National Science Foundation, “S&AS: INT: Learning and Planning for Dynamic Locomotion,” Collaboration with Alan Fern. Total award: \$820,000, my share: \$410,000

Defense Advanced Research Projects Agency, “Natural Bipedal Walking and Running: Stealthy, Efficient, Robust,” total award: \$3,119,138, if options exercised; current incrementally funded amount: \$996,688, single PI award

National Science Foundation, “Leg Mechanics for Dynamic Locomotion,” collaboration with Ross Hatton. Total award 385,201\$, my share: 192,600\$

**Teaching** New curriculum development: ENGR 421/521, Applied Robotics, 4 units, S10: 5.1/4.5 (new course); S11: 38 students, no data; S12: 54 students, 5.1/4.9

New curriculum development: ME536, Actuator Dynamics, S11 (new course), 4 units, 7 students

ME451, Introduction to Instrumentation and Measurement Systems, 4 units, S09: 4.0/4.0 (updated

course), F09: 4.2/4.2, F10: 4.1/4.3, S11: 76 students, 3.3/3.2 (new evaluation system), F12: 56 students, 3.6/3.7

ENGR212, Introduction to Dynamics, W09: 3.2/3.1, 3 units, 58 students

## Advising

### Graduate Students

- Kevin Green, Ph.D. student (expected graduation: 2021)
- Helei Duan, Ph.D. student (expected graduation: 2022)
- Jeremy Dao, Ph.D. student (expected graduation: 2023)
- Jonah Siekmann, M.S. Student (expected graduation: 2021)
- Lorenzo Bermillo, M.S. student (expected graduation: 2021)
- Ryan Batke, M.S. Student (expected graduation: 2022)

### Graduated

- Jesse Rond, M.S., 2019
- Michael Hector, M.S., 2019
- Brian Layng, M.S., 2019
- Patrick Clary, M.S., 2019
- Andrew Abate, Ph.D., Agility Robotics
- Pavel Zaytsev, M.S., Imagination International
- Hamid Vajdani, Ph.D., Postdoctoral Associate at Brown University
- Christian Hubicki, Ph.D., Postdoctoral Associate at Georgia Tech
- Andrew Peekema, M.S., Honeybee Robotics
- Mikhail Jones, M.S., Agility Robotics
- Jesse Grimes, M.S., NASA JPL
- Kevin Kemper, M.S., Meka Robotics
- Devin Koepl, M.S., Hewlett-Packard

### Postdoctoral Researchers

- Daniel Renjewski
- Siavash Rezazadeh
- Alex Sproewitz

### Senior Design Projects

- Tendon design around a joint - MIME, 2016-17, Josh Dopp, Jacob Keeton, Tony Huynh
- ATRIAS foot prototype - MIME, 2013-14, Andy Abate, Ryan Skeelee, Allison Joyner
- Powered Robot gantry - MIME, 2013-14, Nathan Jones, Tyller Grey, Kelly Thomsen
- Powered Robot Gantry - EECS, 2013-14, Jake Yazici, Steven Burrell, Joseph Green
- Brushless Motor Amplifier - EECS, 2012-13, Tyler Slone, Cody Hyman, Daniel Miller
- Spring Characterization Device - MIME, 2011-12, Nicholas Moses, Jonathan Jackson, Eric Hazlett
- Mars Rover chassis design - MIME, 2011-12, Jonathan Ayers, Ian Harsey, Aaron Wilson
- Mars Rover arm design - MIME, 2011-12, Andrew Peekema, Kasey Cousins, Richard Lee
- Design and construction of a robotic arm for Mars Rover - MIME, 2010-11, Jesse Grimes, Jon Doltar, Brandon Conroy
- Design and construction of a robot boom - MIME, 2009-10, Ben Jablonski, Jeff Inman, Andrew Mora
- Design and construction of a robotic arm for Mars Rover - MIME, 2009-10, Joe Hortnagl, Jon Nichols, Andrew Schroth
- Design and construction of a robotic arm for SWAT vehicle - MIME, 2009-10, Megan Colbath, Nick Cornilson, Max Broehl
- Design and construction of cable transmission testing device - MIME, 2009-10, Drew Arnold, Erik Hammagren, Thomas Wright
- Creation of stand-alone software simulation of bipedal running robot - EECS, 2009-10, Gavin Hills, Travis Moore, Jonathan Mark

- Design and construction of prototype robot leg - MIME, 2008-09, Joe Hertel, C.J. Veach, Devin Koepl, Fazil Tazunkan
- Design and construction of teleoperated reconnaissance vehicle for Salem, Oregon SWAT team - MIME, 2008-09, Chris Johnston, Scott Zenier, Rich Walloch

#### **Undergraduate Honor's Theses**

- Kurt Reinshmidt, Neural Delay vs. Reflected Inertia for Control, 2019
- Mitchell Bernards, Using ankle torques to compensate for foot placement error, 2018
- Robert Shannon, deep water temperature measurement sensor, 2017
- Johnathan Van Why, Inertial Measurement, 2015
- Andy Abate, ATRIAS foot, 2014
- Allison Joyner, spring characterization testing, 2013
- Michael Summers, Cable Transmission Testing, 2010
- Devin Koepl, Force-Controller Actuator, 2009

#### **Served on Ph.D. Committee**

- Hossein Faraji, Robotics, Oregon State University
- Chris Holmes-Parker, Dynamics and Control, Oregon State University
- Delvin Pederson, Dynamics and Control, Oregon State University

#### **Served on Masters Committee**

- Ehsan Nasroullahi, Robotics, Oregon State University
- Scott Carson, Robotics, Oregon State University
- Lucas Hill, Robotics, Oregon State University
- Stephen Sills, Mechanical Engineering, Oregon State University
- Ehsan Nasroullahi, Mechanical Engineering, Oregon State University
- Scott Carson, Industrial Engineering, Oregon State University
- Paul Bartlett, Lunar Rover prototype vehicle, Carnegie Mellon University.
- Nathan Abraham, Mini Bone-Attached Robotic System, Carnegie Mellon University.

**University Service** Co-founder of Robotics program at Oregon State University, continued leadership and development of program and facility.

Successfully proposed vision for Graf Hall as a new home for Robotics, represented the faculty during the renovation process.

Co-advisor to the Oregon State University Robotics Club, Sept. 2008-present; Club membership growth from 3-5 members up to over 100, with approximately \$20,000 per year spent on student robotics projects, and many students joining us for graduate school or going on to work for companies such as SpaceX or NASA.

Robotics faculty search committee, 2012-2017 (nearly every year, extensive involvement in selection, recruitment, and hiring of most robotics faculty members)

Mechanical Industrial and Manufacturing Engineering strategy committee, 2016-2017

Undergraduate Program Committee, 2011-2013

MIME Undergraduate Program Committee, 2011, 2012

MIME External Communications Committee Chair, 2015; member, 2016

MIME Seminar Coordinator, 2008-2011

P&T Committee for Geoff Hollinger tenure case, 2018

P&T Committee for Ravi Balasubramanian tenure case, 2017

Mid-Tenure Review for David Blunck, 2016

## Outreach

TEDx Talk, “Walking and Running: Bio-Inspired Robotics,” March 2016: <https://youtu.be/khqi6SiXUzQ>

5+ local Pub talks: Corvallis, Albany, Eugene, Portland.

Tech talk at TechFestNW, 2018

Tech talk at the Oregon Museum of Science and Industry, 2017

ATRIAS displayed at the Oregon Museum of Science and Industry in Portland, OR.

Brought FIRST Tech Challenge to Oregon State as Tournament Director, Oregon State University Regional FIRST Tech Challenge, March 2010; competition has been run by the Robotics Club each year since.

Advising the Robotics, Club, they now regularly demonstrate robots and generate a winning presence at regional competitions and schools.

MABEL, a bipedal version of Thumper that I designed and built, is on a museum tour with the Chicago Field Museum for 5 years, in a traveling exhibit on biomechanics. Videos from Grizzle’s control development on MABEL are posted to youtube: <http://www.youtube.com/user/DynamicLegLocomotion>

Thumper, the monopod robot, traveled in the international version of the Chicago Field Museum’s traveling exhibit.

## Honors, Awards, and Publicity

2019 IEEE Robotics and Automation Magazine Best Paper Award, “Walking and Running with Passive Compliance: Lessons from Engineering A Live Demonstration of the ATRIAS Biped.”

Oregon State University Faculty Innovator Award, 2018

A Google search for “Cassie Robot” returns 9,620,000 hits from news agencies all over the world. The Youtube page with the OSU-produced video currently sits at 2.3 million views, as of September 2019.

Awarded the Oregon State University College of Engineering Dean’s Professorship, 2016.

Phi Kappa Phi Emerging Scholar Award, 2014

Engelbrecht Young Faculty Award, 2014

Popular Mechanics “Breakthrough” Award, 2012:  
<http://www.popularmechanics.com/technology/engineering/news/10-world-changing-innovators-for-slide-3>

Best Technical Paper, J.A. Grimes and J.W. Hurst, “The Design of ATRIAS 1.0: A Unique Monopod, Hopping Robot,” International Conference on Climbing and Walking Robots (CLAWAR), July

2012.

Best Poster Presentation, “Optimization-Inspired Control Policies for Analytically and Computationally Intractable Systems,” C. Hubicki and J.W. Hurst, Dynamic Walking, Principles and Concepts of Legged Locomotion, July 2011.

Control Systems Magazine cover story of MABEL, April 2011

Machine Design Magazine cover story on BiMASC, July 26, 2007

Engineering TV interviews on AMASC and BiMASC robots, episodes 37 and 38, <http://engineeringtv.com>

Integrative Graduate Education and Research Traineeship (IGERT) recipient, September 2005—September 2006.

Attended International School of Robot Science, September 2005, Tokyo, Japan. Awarded IEEE Fellowship for tuition.

National Science Foundation Graduate Fellowship recipient, August 2001—May 2003.

SAE International Walking Machine Decathlon 1st place, April 2000  
Special Awards: Excellence in Autonomy, Best Technical Presentation.

### **Technology Transfer**

Founded Agility Robotics; negotiated exclusive license agreement with Oregon State University for technology related to legged locomotion. Agility funded via three different sources of seed capital, manufactured and sold Cassie robots to 10 leading research institutions. Agility Robotics continued on to raise \$8m in Series A funding, and will soon release Digit, a bipedal robot with arms and perception sensors, as a second product.

### **Professional Activities**

Co-organizer for IEEE International Conference on Robotics and Automation (ICRA) Workshop on Learning Legged Locomotion, May 24, 2019.

Associate Editor for IEEE Robotics and Automation Letters (IEEE RA-L) 2016-2018

Area chair for hardware and control, Robotics: Science and Systems (RSS) 2017

Co-Organizer for Dynamic Walking meeting at the Florida Institute for Human and Machine Cognition, May 2012

Assisted in organization of CMU Dynamic Walking meeting, 2005

- Chaired session on actuation for passive dynamics
- Co-organized program with Dr. Martijn Wisse for approximately 50 faculty and students from Cornell, Ohio State, Carnegie Mellon, MIT, Delft, and University of Michigan

### **Reviewer:**

- IEEE Transactions on Robotics
- IEEE Journal of Robotics Research
- IEEE/ASME Transactions on Mechatronics
- IEEE Transactions on Systems, Man, and Cybernetics
- IEEE Transactions on Biomedical Engineering
- IEEE Sensors Journal
- The International Journal of Robotics Research

- Journal of Field Robotics
- Journal of Bioinspiration and Biomimetics
- International Journal of Humanoid Robotics
- ASME Journal of Dynamic Systems, Measurement and Control
- ASME Journal of Mechanical Design
- ASME Transactions on Mechatronics
- ASME International Design Engineering Technical Conferences and Computers and Information in Engineering Conference
- Public Library of Science (PLOS) ONE
- Robotics and Autonomous Systems Journal: Special Issue on Morphology, Control and Passive Dynamics, December 2005
- Robot Science and Systems (RSS)
- IEEE International Conference on Robotics and Automation (ICRA)
- IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
- ASME Dynamic Systems and Control Conference (DSCC)

Member, Institute of Electrical and Electronics Engineers (IEEE) Robotics and Automation Society