

Yong-Lae Park

Curriculum Vitae (Jan. 2015)

Assistant Professor

Robotics Institute – School of Computer Science

Mechanical Engineering (courtesy appointment) – College of Engineering

Carnegie Mellon University

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EDUCATION

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|--------------|---|---------------|
| Ph.D. | Stanford University , Stanford, CA
<i>Advisor: Prof. Mark R. Cutkosky</i> <ul style="list-style-type: none">• Mechanical Engineering; minor in Electrical Engineering• Dissertation: “Embedded Optical Sensing for Robots in Extreme Environments” | April 2010 |
| M.S. | Stanford University , Stanford, CA
<i>Advisor: Prof. Mark R. Cutkosky</i> <ul style="list-style-type: none">• Mechanical Engineering | June 2005 |
| B.S. | Kansas State University , Manhattan, KS <ul style="list-style-type: none">• Manufacturing Systems Engineering | May 2003 |
| B.E. | Korea University , Seoul, Korea <ul style="list-style-type: none">• Industrial Engineering | February 2000 |

EMPLOYMENT

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|--|---|--|
| September 2013
~ present | Assistant Professor
Robotics Institute, School of Computer Science,
Carnegie Mellon University, Pittsburgh, PA | |
| April 2010
~ August 2013 | Technology Development Fellow
Wyss Institute for Biologically-Inspired Engineering, Harvard University, Boston, MA
Postdoctoral Research Fellow
School of Engineering and Applied Sciences (SEAS), Harvard University, Cambridge, MA | |
| September 2004
~ March 2010 | Graduate Research Assistant
Department of Mechanical Engineering, College of Engineering,
Stanford University, Stanford, CA | |

HONORS AND AWARDS

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| December 2014 | Okawa Foundation Research Grant Award , The Okawa Foundation for Information and Telecommunications. | |
| November 2013 | IEEE Sensors Journal Best Paper Award , “Design and Fabrication of Soft Artificial Skin Using Embedded Microchannels and Liquid Conductors,” IEEE Sensors Council. | |
| September 2012 | NASA Tech Brief Award , “Multiplexed Force and Deflection Sensing Shell Membranes for Robotic Manipulator,” NASA Johnson Space Center (JSC), Houston, TX. | |
| May 2012 | Cover Article , “Design and Fabrication of Soft Artificial Skin Using Embedded Microchannels and Liquid Conductors,” <i>IEEE Sensors Journal</i> , vol. 12, no. 8, pp. 2711-2718, 2012. | |
| April 2010 | Wyss Technology Development Fellowship , Wyss Institute for Biologically Inspired Engineering, Harvard University, Boston, MA. <ul style="list-style-type: none">• \$ 300,000 for 4-year independent postdoctoral research. | |

- May 2008** **ICRA'08 RAS Student Travel Award**, to attend and present a paper in the 2008 IEEE International Conference on Robotics and Automation.
- April 2007** **Best Manipulation Paper Award Finalist**, "Force Sensing Robot Fingers using Embedded Fiber Grating Sensors and Shape Deposition Manufacturing," *The 2007 IEEE International Conference on Robotics and Automation*.
- April 2007** **ICRA'07 RAS Student Travel Award**, to attend and present a paper in the 2007 IEEE International Conference on Robotics and Automation.
- July 2005** **Merit Award**, "BMW-Mini Interior Mood Lighting System," 2004 Award Program for the Advancement of Arc Welded Design, Engineering and Fabrication, The James F. Lincoln Arc Welding Foundation.

PUBLICATIONS

Dissertation

1. **Y.-L. Park**, "Embedded Optical Sensing for Robots in Extreme Environments," Ph.D. Dissertation, *Stanford University*, March 2010.

Journal Articles

2. J.-B. Chossat, H.-S. Shin, **Y.-L. Park**, and V. Duchaine, "Soft Tactile Skin using an Embedded Ionic Liquid and Tomographic Imaging," *ASME Journal of Mechanisms and Robotics*, 2015 (doi:10.1115/1.4029474).
3. Y. Menguc, **Y.-L. Park**, H. Pei, D. Vogt, P. Aubin, L. Fluke, E. Winchell, L. Stirling, R. J. Wood, and C. Walsh, "Wearable Soft Sensing Suit for Human Gait Measurement," *International Journal of Robotics Research*, Vol. 33, No. 14, pp. 1748-1764, 2014.
4. M. Wehner, M. T. Tolley, Y. Menguc, **Y.-L. Park**, A. Mozeika, Y. Ding, C. Onal, R. F. Shepherd, D. Rus, G. M. Whitesides, and R. J. Wood, "Pneumatic Energy Sources for Autonomous Soft Robots and Wearable Soft Robots," *Soft Robotics*, Vol. 1, No. 4, pp. 263-274, 2014.
5. **Y.-L. Park**, B. Chen, N. O. Pérez-Arancibia, D. Young, L. Stirling, R. J. Wood, E. C. Goldfield, and R. Nagpal, "Design and Control of a Bio-Inspired Wearable Robotic Device for Ankle-Foot Rehabilitation," *Bioinspiration & Biomimetics*, Vol. 9, No. 1, pp. 016007, 2014.
6. S. Elayaperumal, J. Plata, A. Holbrook, **Y.-L. Park**, K. Butts Pauly, M. Cutkosky, and D. Bruce, "Autonomous Real-Time Interventional Scan Plane Control with a 3-D Shape-Sensing Needle," *IEEE Transactions on Medical Imaging*, Vol. 33, No. 11, pp. 2128-2139, 2014.
7. D. Vogt, **Y.-L. Park** (co-1st author), and R. J. Wood, "Design and Characterization of a Soft Multi-Axis Force Sensor using Embedded Microfluidic Channels," *IEEE Sensors Journal*, Vol. 13, No. 10, pp. 4056-4064, 2013.
8. J.-B. Chossat, **Y.-L. Park**, R. J. Wood, and V. Duchaine, "A Soft Strain Sensor Based on Ionic and Metal Liquids," *IEEE Sensors Journal*, Vol. 13, No. 9, pp. 3405-3414, 2013.
9. D. Tepayotl-Ramirez, T. Lu, **Y.-L. Park**, and C. Majidi, "Collapse of Triangular Channels in a Soft Elastomer," *Applied Physics Letters*, Vol. 102, No. 4, 2013.
10. **Y.-L. Park**, D. Tepayotl-Ramirez, R. J. Wood, and C. Majidi, "Influence of Cross-Sectional Geometry on the Sensitivity of Liquid-Phase Electronic Pressure Sensors," *Applied Physics Letters*, Vol. 101, No. 19, 2012.
11. **Y.-L. Park**, B. Chen, and R. J. Wood, "Design and Fabrication of Soft Artificial Skin using Embedded Microchannels and Liquid Conductors," *IEEE Sensors Journal*, Vol. 12, No. 8, pp. 2711-2718, 2012.
Cover Article.
Winner: Best Paper of 2012.
12. E. C. Goldfield, **Y.-L. Park**, B. Chen, W.-H. Hsu, A. Wessendorf, D. Young, M. Wehner, D. Stephen, L. Stirling, D. Newman, R. Nagpal, E. Saltzman, K. G. Holt, C. Walsh, and R. J. Wood, "Bio-Inspired Design of Soft Robotic Assistive Devices: The Interface of Physics, Biology, and Behavior," *Ecological Psychology*, Vol. 24, No. 4, pp. 300-327, 2012.
13. **Y.-L. Park**, C. Majidi (co-1st author), R. Kramer, P. Bérard, and R. J. Wood, "Hyperelastic Pressure Sensing with a Liquid-Embedded Elastomer," *Journal of Micromechanics and Microengineering*, Vol. 20, No. 12, 2010.

14. **Y.-L. Park**, S. Elayaperumal, B. Daniel, S. C. Ryu, M. Shin, R. J. Black, B. Moslehi, and M. R. Cutkosky, "Real-Time Estimation of 3-D Needle Shape and Deflection for MRI-Guided Interventions," *IEEE/ASME Transactions on Mechatronics*, Vol. 15, No. 6, pp. 906–915, 2010.
15. D. Shin, I. Sardellitti, **Y.-L. Park**, O. Khatib, and M. R. Cutkosky, "Design and Control of a Bio-Inspired Human-Friendly Robot," *International Journal of Robotics Research*, Vol. 29, No. 5, pp. 571-584, 2010.
16. **Y.-L. Park**, S. C. Ryu, R. J. Black, K. Chau, B. Moslehi and M. R. Cutkosky, "Exoskeletal Force-Sensing End-Effectors with Embedded Optical Fiber Bragg Grating Sensors," *IEEE Transactions on Robotics*, Vol. 25, No. 6, pp. 1319–1331, 2009.

Book Chapters

17. D. Shin, I. Sardellitti, **Y.-L. Park**, O. Khatib, and M. R. Cutkosky, "Design and Control of a Bio-inspired Human-Friendly Robot," *Springer Tracts in Advanced Robotics (STAR)*, Vol. 54, Springer, Berlin, Heidelberg, Germany, pp. 43-52, 2009.

Conference Proceeding Articles (full-length papers)

18. J.-B. Chossat, Y. Tao, V. Duchain, and **Y.-L. Park**, "Wearable Soft Artificial Skin for Hand Motion Detection with Embedded Microfluidic Strain Sensing," To appear in *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA '15)*, Seattle, WA, May 2015.
19. H.-S. Shin and **Y.-L. Park**, "Improved Pressure Response with Embedded Solid Microbeads in Microfluidic Soft Sensors," *Proceedings of the IEEE Sensors Conference*, pp. 1788-1781, Valencia, Spain, November 2014.
20. **Y.-L. Park**, J. Santos, K. G. Galloway, E. C. Goldfield, and R. J. Wood, "A Soft Wearable Robotic Device for Active Knee Motions through Development of Compact Flat Pneumatic Artificial Muscles," *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA '14)*, pp. 4805-4810, Hong Kong, China, May 2014.
21. **Y.-L. Park** and R. J. Wood, "Smart Pneumatic Artificial Muscle Actuator with Embedded Microfluidic Sensing," *Proceedings of the IEEE Sensors 2013 Conference*, pp. 689-692, Baltimore, MD, November 2013.
22. Y. Menguc, **Y.-L. Park**, E. Martinez-Villalpano, P. Aubin, M. Zisook, L. Stirling, R. J. Wood, and C. Walsh, "Soft Wearable Motion Sensing Suit for Lower Limb Biomechanics Measurements," *Proceedings of the 2013 IEEE International Conference on Robotics and Automation (ICRA '13)*, pp. 5389-5296, Karlsruhe, Germany, May 2013.
23. D. Vogt, Y. Menguc, **Y.-L. Park**, M. Wehner, R. K. Kramer, C. Majidi, L. P. Jentoft, Y. Tenzer, R. D. Howe, and R. J. Wood, "Progress in Soft, Flexible, and Stretchable Sensing Systems," *Proceedings of the International Workshop on Research Frontiers in Electronics Skin Technology at ICRA '13*, Karlsruhe, Germany, May 2013.
24. **Y.-L. Park**, D. Young, B. Chen, R. J. Wood, R. Nagpal, and E. C. Goldfield, "Networked Bio-Inspired Modules For Sensorimotor Control of Wearable Cyberphysical Devices," *Proceedings of the International Conference on Computing, Networking and Communications (ICNC '13)*, pp. 92-96, San Diego, CA, January 2013.
25. D. Vogt, **Y.-L. Park**, and R. J. Wood, "A Soft Multi-Axis Force Sensor," *Proceedings of the IEEE Sensors 2012 Conference*, pp. 897-900, Taipei, Taiwan, October 2012.
26. **Y.-L. Park**, B. Chen, C. Majidi, R. J. Wood, R. Nagpal, and E. Goldfield, "Active Modular Elastomer Sleeve for Soft Wearable Assistance Robots," *Proceedings of the 2012 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS '12)*, pp. 1595-1602, Vila Moura, Portugal, October 2012.
27. J.-B. Chossat, **Y.-L. Park**, R. J. Wood, and V. Duchaine, "A Soft Elastomer Strain Sensor Based on an EGaIn/Ionic Solution Hybrid Construction," *Proceedings of the International Workshop on Smart Materials and Alternative Technologies for Bio-Inspired Robots and Systems at IROS '12*, Vila Moura, Portugal, October 2012.
28. M. Wehner, **Y.-L. Park**, C. Walsh, R. Nagpal, R. J. Wood, T. Moor, and E. Goldfield, "Experimental Characterization of Components for Active Soft Orthotics," *Proceedings of the IEEE International Conference on Biomedical Robotics and Biomechatronics (BioRob '12)*, pp. 1586-1592, Roma, Italy, June 2012.
29. **Y.-L. Park**, B. Chen, and R. J. Wood, "Soft Artificial Skin with Multi-Modal Sensing Capability using Embedded Liquid Conductors," *Proceedings of the IEEE Sensors 2011 Conference*, pp. 81-84, Limerick, Ireland, October 2011.
30. **Y.-L. Park**, B. Chen, D. Young, L. Stirling, R. J. Wood, E. Goldfield, and R. Nagpal, "Bio-Inspired Active Soft Orthotic Device for Ankle Foot Pathologies," *Proceedings of the 2011 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS '11)*, pp. 4488-4495, San Francisco, CA, September 2011.
31. D. Lee, S. Kim, **Y.-L. Park**, and R. J. Wood, "Design of Centimeter-Scale Inchworm Robots with Bidirectional Claws," *Proceedings of the 2011 IEEE International Conference on Robotics and Automation (ICRA '11)*, pp. 3197-3204, Shanghai, China, May 2011.

32. **Y.-L. Park**, S. C. Ryu, R. J. Black, B. Moslehi and M. R. Cutkosky, "Fingertip Force Control with Embedded Fiber Bragg Grating Sensors," *Proceedings of the 2008 IEEE International Conference on Robotics and Automation (ICRA '08)*, pp. 3431-3436, Pasadena, CA, May 2008.
33. **Y.-L. Park**, K. Chau, R. J. Black, and M. R. Cutkosky, "Force Sensing Robot Fingers using Embedded Fiber Grating Sensors and Shape Deposition Manufacturing," *Proceedings of the 2007 IEEE International Conference on Robotics and Automation (ICRA '07)*, pp. 1510-1516, Roma, Italy, April 2007. – **Best Manipulation Paper Award Finalist.**
34. R. J. Black, D. Zare, L. Oblea, **Y.-L. Park**, B. Moslehi, "On the Gage Factor for Optical Fiber Grating Strain Gages," *Proceedings of Society for the Advancement of Materials and Process Engineering (SAMPE '08), the 53rd International SAMPE Symposium and Exhibition*, Vol. 53, Long Beach, CA, May 2008.

Conference Proceeding Abstracts

35. **Y.-L. Park**, "Bio-Inspired Smart Pneumatic Artificial Muscles with Integrated Soft Artificial Skin Sensors," *International Workshop on Advances on Soft Robotics, Robotics Science and Systems (RSS) Conference*, Berkeley, CA, July 2014.
36. **Y.-L. Park**, "Novel Sensing Mechanisms for Medical Robotics," *4th Biennial North American Summer School on Surgical Robotics*, Pittsburgh, PA, July 2014.
37. **Y.-L. Park**, D. Vogt, and R. J. Wood, "Design and Manufacture of Soft Artificial Skin Sensors," *International Workshop on Soft Robotics and Morphological Computation*, Monte Verità, Ascona, Switzerland, July 2013.
38. Y. Menguc, **Y.-L. Park**, E. Martinez-Villalpando, P. Aubin, L. Stirling, C. J. Walsh, and R. J. Wood, "Soft Sensing Suit for Joint-Angle Measurement," *International Workshop on Soft Robotics and Morphological Computation*, Monte Verità, Switzerland, July 2013.
39. D. M. Vogt, Y. Menguc, **Y.-L. Park**, M. Wehner, R. Kramer, C. Majidi, L. Jentoft, Y. Tenzer, R. Howe, and R. J. Wood, "Progress in Soft, Flexible, and Stretchable Sensing Systems," *International Workshop on Research Frontiers in Electronic Skin Technology at ICRA '13*, Karlsruhe, Germany, May 2013.
40. D. Ramirez-Tepayotl, **Y.-L. Park**, T. Lu, and C. Majidi, "Collapse of Non-Rectangular Channels in a Soft Elastomer," *American Physics Society (APS) March Meeting*, Baltimore, MD, March 2013.
41. D. Ramirez-Tepayotl, T. Lu, **Y.-L. Park**, and C. Majidi, "Collapse of Non-Rectangular Microchannels in an Elastic Halfspace: Theory, Simulation, and Experiment," *Society of Engineering Science (SES) 49th Annual Technical Meeting*, Atlanta, GA, October 2012.
42. R. K. Kramer, C. Majidi, **Y.-L. Park**, J. Paik, and R. J. Wood, "Liquid-Embedded Elastomer Electronics," *American Physical Society (APS) March Meeting*, Baltimore, MD, March 2012.
43. R. K. Kramer, **Y.-L. Park**, C. Majidi, P. Berard, and R. J. Wood, "Highly Compliant Pressure Sensor using Conductive Fluid in an Elastomeric Sheet," *Materials Research Society (MRS) Fall Meeting*, Boston, MA, November 2010.
44. C. Majidi, **Y.-L. Park**, R. Kramer, P. Berard, and R. J. Wood, "Elastomers Embedded with Liquid Filled Microchannels for Robotics and Sensing," *Society of Engineering Science (SES) 47th Annual Technical Meeting*, Ames, IA, October 2010.
45. **Y.-L. Park**, S. Elayaperumal, S. C. Ryu, B. L. Daniel, R. J. Black, B. Moslehi, and M. R. Cutkosky, "MRI-Compatible Haptics: Strain Sensing for Real-Time Estimation of Three Dimensional Needle Deflection in MRI Environments," *Proceedings of the 2009 ISMRM 17th Scientific Meeting and Exhibition* (oral presentation), Honolulu, HI, April 2009.
46. **Y.-L. Park**, S. Elayaperumal, B. L. Daniel, E. Kaye, K. B. Pauly, R. J. Black, and M. R. Cutkosky, "MRI-Compatible Haptics: Feasibility of using Optical Fiber Bragg Grating Strain-Sensors to Detect Deflection of Needles in an MRI Environment," *Proceedings of the 2008 ISMRM 16th Scientific Meeting and Exhibition* (oral presentation), Toronto, Canada, May 2008.
47. J. T. Blundo, G. Chua, O. J. Abilez, **Y.-L. Park**, A. Rastegar, F. Cao, C. Zarins, J. C. Wu, and B. L. Pruitt, "BioMEMS Platform for Electromechanical Stimulation of Cell Culture," *ASME Summer Bioengineering Conference*, Keystone, CO, June 2007.

Manuscripts Submitted or in Preparation

48. H.-S. Shin and **Y.-L. Park**, "Solid Microbead Embedded Microfluidic Soft Sensors for Improved Pressure Response," Target Journal: *Applied Physics Letters*, Original manuscript, To be submitted in February 2015.
49. **Y.-L. Park**, J. Santos, K. G. Galloway, E. C. Goldfield, and R. J. Wood, "Smart Pneumatic Artificial Muscle," Target Journal: *IEEE/ASME Transactions on Mechatronics*, Original manuscript, To be submitted in February 2015.

PATENTS

1. **Y.-L. Park**, B. Moslehi, R. J. Black, M. R. Cutkosky, and K. K. Chau “Force and Deflection Sensor with Shell Membrane and Optical Gratings and Method of Manufacture,” *U.S. Patent, US 7,903,907* issued on March 8th, 2011 (Application Serial No. US12/100,417 filed on April 10th, 2008).
2. **Y.-L. Park**, B. Moslehi, R. J. Black, M. R. Cutkosky, and K. K. Chau “Process for Manufacturing Shell Membrane Force and Deflection Sensor,” *U.S. Patent, US 8,257,991* issued on September 4th, 2012 (Application Serial No. US12/100,417 filed on April 10th, 2008).
3. C. S. Majidi, R. J. Wood, P. Bérard, and **Y.-L. Park**, “Stretchable Two-Dimensional Pressure Sensor,” *U.S. Patent, US 8,316,719* issued on November 27th, 2012 (Application Serial No. US12/945,014 filed on November 12th, 2010).
4. **Y.-L. Park**, R. J. Black, B. Moslehi, M. R. Cutkosky, S. Elayaperumal, B. Daniel, A. Yeung, and V. Sotoudeh, “Steerable Shape Sensing Biopsy Needle and Catheter,” *U.S. Patent, US 8,649,847* issued on February 11th, 2014 (Application Serial No. US12/562,855 filed on September 18th, 2009).
5. E. C. Goldfield, **Y.-L. Park**, B. Chen, C. Majidi, R. J. Wood, and R. Nagpal, “Actively Controlled Wearable Orthotic Devices and Active Modular Elastomer Sleeve for Wearable Orthotic Devices,” U.S. Provisional Patent Application (Serial No. 61/529,961) on September 1, 2011, and PCT Application (Serial No. US12/53569) on September 1st, 2012.
6. **Y.-L. Park**, R. J. Wood, C. Majidi, and B. Chen, “Artificial Skin and Elastic Strain Sensor” U.S. Provisional Patent Application (Serial No. 61/538,841) filed on September 29th, 2011, and PCT Application (Serial No. US12/56903) filed on September 24th, 2012.
7. D. Vogt, **Y.-L. Park**, and R. J. Wood, “Multi-Axis Force Sensing Soft Artificial Skin,” U.S. Provisional Patent Application (Serial No. 61/719,938) filed on October 27th, 2012, and PCT Application (Serial No. US13/066034) filed on October 22nd, 2013.
8. **Y.-L. Park**, R. J. Wood, J. Santos, and E. C. Goldfield, “Pneumatic Sensing Actuator,” U.S. Provisional Patent Application (Serial No. 61/754,681) filed on January 21st, 2013, and PCT Application (Serial No. US14/12299) filed on January 21st, 2014.
9. M. R. Cutkosky, B. L. Daniel, S. Elayaperumal, P. Renaud, and **Y.-L. Park**, “Parallel Master-Slave Mechanism,” U.S. Provisional Patent Application (Serial No. 61/775,876) filed on March 11th, 2013, and PCT Application (Serial No. US14/204836) filed on March 11th, 2014.

NEWS & MEDIA

1. “Signal Processing in Next-Generation Prosthetics,” John Edwards, *IEEE Signal Processing Magazine*, Vol. 32, No. 1, pp. 9-12, January 2015.
2. “The Real Science Behind Disney's Big Hero 6,” *Our Region's Business, WPXI-TV*, December 14, 2014.
3. “Okawa Foundation Awards Research Grant To Yong-Lae Park,” Byron Spice, *CMU Press Release*, December 15, 2014.
4. “CMU Soft Robot Inspires Disney's Newest Movie Hero Baymax,” Laurie Bailey, *NEXTpittsburgh*, November 7, 2014.
5. “Carnegie Mellon's Inflatable Robotic Arm Inspires Design of Disney's Latest Character,” Byron Spice, *Carnegie Mellon News*, October 29, 2014.
6. “Soft Sensors in Exosuit Turn Soldiers into \$6 Million Men,” Darleen Hartley, *VR World*, September 29, 2014.
7. “Engineering A Biologically Inspired, Soft Orthotic Device,” Clinton, Shaffer, *Med Device Online*, February 27, 2014.
8. “Researcher Takes a Muscular Approach to Robotics,” Richard Webner, *Pittsburgh Post-Gazette*, February 3, 2014.
9. “Hawking Sys There Are No Black Holes, and a 3D Printed Liver Could Be on The Way,” James Trew, *Engadget*, January 26, 2014.
10. “Bio-Inspired Medical Device Improves Ankle Rehabilitation,” Claire Gianakas, *CMU The Tartan*, January 26, 2014.
11. “Robo-Ankle Flexes Artificial Muscles for Rehab,” Nic Halverson, *Discovery News*, January 23, 2014.
12. “Robotic Device Could Aid Foot Rehabilitation,” *Mumbai Mirror*, January 23, 2014.
13. “Robotic Orthotic,” *CMU Homepage Stories*, January 23, 2014.
14. “These Robotic Super Socks Will Aid Rehabilitation,” Andrew Liszewski, *Gizmodo*, January 22, 2014.
15. “An Exoskeleton with a Soft Side,” Gavin Corley, *Medgadget*, January 22, 2014.

16. "Robo-Ankle Uses Artificial Muscles to Get You Walking," Jacob Aron, *New Scientist*, January 22, 2014.
17. "Bio-Inspired Robotic Device Could Aid Ankle-Foot Rehabilitation, CMU researcher says," *NSF News*, January 20, 2014.
18. "Bio-Inspired Robotic Device Could Aid Ankle-Foot Rehabilitation, CMU researcher says," Byron Spice, *CMU Press Release*, January 20, 2014.
19. "Multiplexed Force and Deflection Sensing Shell Membranes for Robotic Manipulator," *NASA Tech Briefs*, Vol. 36, No. 9, September 2012.
20. "Smart Suit Improves Physical Endurance," Twig Mowatt, *Harvard Gazette*, July 19, 2012.
21. "A Pressure and Strain Sensor Fabricated on Soft Artificial Skin," *IEEE Life Sciences*, 2012.

TEACHING

1. Spring 2015: 16-474, Robotics Capstone (New development and offering)
2. Spring 2014: 16-299, Introduction to Feedback Control Systems

INVITED TALKS

1. "Bio-Inspired Soft Robotics: Novel Sensing and Actuation Mechanisms for Highly Compliant Systems" *NASA Johnson Space Center (JSC)*, Houston, TX, December 2014.
2. "Bio-Inspired Soft Robotics: Novel Sensing and Actuation Mechanisms for Highly Compliant Systems" *Samsung Electronics Co.*, Yongin, Korea, November 2014.
3. "Bio-Inspired Soft Robotics: Novel Sensing and Actuation Mechanisms for Highly Compliant Systems" *Mechanical Engineering, Sungkyunkwan University*, Suwon, Korea, November 2014.
4. "Bio-Inspired Sensing and Actuation Mechanisms for Compliant Systems" *24-676 (Bio-Inspired Robotics) Guest Lecture, Carnegie Mellon University*, Pittsburgh, PA, November 2014.
5. "Bio-Inspired Soft Robotics: Novel Sensing and Actuation Mechanisms for Highly Compliant Systems" *Laboratory for Computational Sensing and Robotics, Johns Hopkins University*, Baltimore, MD, October 2014.
6. "Bio-Inspired Soft Robotics: Novel Sensing and Actuation Mechanisms for Highly Compliant Systems" *National Robotics Engineering Center (NREC)*, Pittsburgh, PA, October 2014.
7. "Bio-Inspired Soft Robotics: New Ways of Sensing and Actuation" *RI Seminar Series, Robotics Institute, Carnegie Mellon University*, Pittsburgh, PA, September 2014.
8. "Novel Sensing Mechanisms for Medical Robotics" *4th Biennial North American Summer School on Surgical Robotics*, Pittsburgh, PA, July 2014.
9. "Bio-Inspired Smart Pneumatic Artificial Muscles with Integrated Soft Artificial Skin Sensors" *Advances on Soft Robotics Workshop, Robotics Science and Systems (RSS) Conference*, Berkeley, CA, July 2014.
10. "Bio-Inspired Soft Robotics: New Ways of Sensing, Actuation, and Integration" *NASA Jet Propulsion Laboratory (JPL)*, Pasadena, CA March 2014.
11. "Bio-Inspired Soft Robotics: New Ways of Sensing, Actuation, and Integration" *Aerospace and Mechanical Engineering, University of Southern California*, Los Angeles, CA March 2014.
12. "Bio-Inspired Soft Robotics: New Ways of Sensing, Actuation, and Integration" *Mechanical Engineering, University of Pittsburgh*, Pittsburgh, PA, March 2014.
13. "Bio-Inspired Soft Micro-Robotics for Healthcare" *Mechanical Engineering, University of Texas at Dallas*, Dallas, TX, April 2013.
14. "Bio-Inspired Soft Micro-Robotics for Healthcare" *Mechanical Science and Engineering, University of Illinois at Urbana-Champaign*, Urbana, IL, March 2013.
15. "Bio-Inspired Soft Micro-Robotics for Healthcare" *Mechanical Engineering, University of Maryland*, College Park, MD, March 2013.
16. "Bio-Inspired Soft Micro-Robotics for Healthcare" *Mechanical and Aerospace Engineering, North Carolina State University*, Raleigh, NC, March 2013.
17. "Bio-Inspired Soft Micro-Robotics for Healthcare" *Mechanical Engineering, Seoul National University*, Seoul, Korea, March 2013.

18. “Bio-Inspired Soft Micro-Robotics for Healthcare”
Korea Institute for Science and Technology (KIST), Seoul, Korea, March 2013.
19. “Bio-Inspired Soft Micro-Robotics for Healthcare”
Mechanical Engineering, University of Connecticut, Storrs, CT, March 2013.
20. “Bio-Inspired Soft Micro-Robotics for Healthcare”
School of Computer Science, Carnegie Mellon University, Pittsburgh, PA, February 2013.
21. “Design and Manufacturing of Bio-Inspired Soft Micro-Robots for Healthcare”
Mechanical and Aerospace Engineering, Rutgers University, New Brunswick, NJ, February 2013.
22. “Soft Micro-Robotics for Healthcare: Bio-Inspired Design and Manufacturing”
Mechanical Engineering, University of Utah, Salt Lake City, UT, February 2013
23. “Biologically Inspired Soft Robotics for Healthcare”
Ira A. Fulton School of Engineering, Arizona State University, Tempe, AZ, January 2013.
24. “Design and Manufacturing of Soft Robots for Medical Applications”
Mechanical and Aerospace Engineering, University of California (UCLA), Los Angeles, CA, February 2012.
25. “Bio-Inspired Design of Soft Robots for Medical Applications”
Mechanical Engineering, University of California (UC Riverside), Riverside, CA, February 2012.
26. “Soft Robotics for Biomedical and Human Rehabilitation Applications”
Daegu-Gyeongbuk Institute for Science and Technology (DGIST), Daegu, Korea, November 2011.
27. “Design and Manufacturing of Novel Sensing and Actuation Systems for Medical Robots”
Mechanical Engineering, Massachusetts Institute of Technology (MIT), Cambridge, MA, March 2011.
28. “Design and Manufacturing of Novel Sensing and Actuation Systems for Medical Robots”
ES51 (Computer-Aided Machine Design) Guest Lecture, Harvard University, Cambridge, MA, March 2011.
29. “Integration of Novel Sensing and Actuation Systems for Medical Robotics”
Mechanical Engineering, University of Minnesota, Twin Cities, MN, March 2011.
30. “Soft Sensing and Actuation Systems for Medical Robotics”
School of Computer Science, Carnegie Mellon University, Pittsburgh, PA, March 2011.
31. “Embedded Optical Sensing for Robots in Extreme Environments”
Mechanical Engineering, Korea University, Seoul, Korea, March 2010.
32. “Embedded Optical Sensing for Robots in Extreme Environments”
Wyss Institute for Biologically Inspired Engineering, Harvard University, Cambridge, MA, February 2010.

PROFESSIONAL SERVICES

Editorial Service

- **Guest Editor**, *ASME Journal of Mechanisms and Robotics* – Special Issue on Novel Approaches to Design and Manufacture of Fully-Integrated Robotic Mechanisms, 2015.

Referee for Journals and Conferences

- Nature Communications
- IEEE Transactions on Robotics (T-RO)
- IEEE/ASME Transactions on Mechatronics (TMECH)
- IEEE Sensors Journal
- IEEE Journal of Electromechanical Systems (JMEMS)
- IEEE Robotics and Automation Magazine (RAM)
- ASME Journal of Mechanisms and Robotics
- Bioinspiration & Biomimetics – *IOP Publishing*
- Proceedings A – *The Royal Society*
- Micromachines – *MDPI Open Access Publishing*
- Sensors – *MDPI Open Access Publishing*

- Actuators – *MDPI Open Access Publishing*
- Soft Robotics – *Mary Ann Liebert, Inc. Publishers*
- IEEE International Conference on Robotics and Automation (ICRA)
- IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
- IEEE International Conference on Biomedical Robotics and Biomechanics (BioRob)
- IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM)
- IEEE International Conference on Mechatronics (ICM)
- IEEE International Workshop on Advanced Robotics and Social Impacts (ARSO)
- ASME Dynamic Systems and Control Conference (DSC)

Professional Society Technical Committee

- IEEE Engineering in Medicine & Biology Society (EMBS) BioRobotics Technical Committee since 2015.

Conference Technical Program Committee

- SPIE Sensing Technology + Applications Conference: Sensors for Next Generation Robotics II, Baltimore, MD, April 2015.
- ICNC 2013 International Workshop on Cyber-Physical System (CPS) and Its Computing and Networking Design, San Diego, CA, January 2013.

Conference Session Chair/Co-Chair

- IEEE International Conference on Robotics and Automation (ICRA), Hong Kong, China, June 2014.
- IEEE Sensors 2013 Conference, Baltimore, MD, November 2013.
- IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Vila Moura, Portugal, October 2012.

