

Eric Wade

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Education

Postdoctoral Fellow, Division of Biokinesiology and Physical Therapy

University of Southern California

Los Angeles, CA, Jul. 2009–present

Advisor: Carolee J. Winstein

Co-Advisor: Maja J. Matarić

Research: *Wearable Sensors for Ambient Monitoring of Individuals Post-Stroke*

Postdoctoral Fellow, Department of Computer Science

University of Southern California

Los Angeles, CA, Feb. 2007–Jul. 2009

Advisor: Maja J. Matarić

Research: *Socially Assistive Robotics for Post-Stroke Rehabilitation*

Doctor of Philosophy, Department of Mechanical Engineering

Massachusetts Institute of Technology

Cambridge, MA, Sept. 2004–Feb. 2007

Advisor: H. Harry Asada

Thesis: *Wearable Health Monitoring System: DC Power-Line Communication Network utilizing Electrically Conductive Fabric Transmission Media*

Master of Science, Mechanical Engineering

Massachusetts Institute of Technology

Cambridge, MA, Sept. 2000–Sept. 2004

Advisor: H. Harry Asada

Thesis: *DC Powerline Communication System using a Transmission Line Transformer for High Degree of Freedom Applications*

Master of Science, Electrical Engineering

Massachusetts Institute of Technology

Cambridge, MA, Sept. 2000–Sept. 2004

Advisor: H. Harry Asada

Thesis: *DC Powerline Communication System using a Transmission Line Transformer for High Degree of Freedom Applications*

Bachelor of Science, Mechanical Engineering

Massachusetts Institute of Technology

Cambridge, MA, Sept. 1996–Jun. 2000

Academic / Teaching Experience

Guest Lecturer, *Business Entrepreneurship 557, Technology Commercialization*, Marshall School of Business, University of Southern California, Los Angeles, CA, Fall 2011

Guest Lecturer, *ENGR 499, Engineering Science and Systems*, Viterbi School of Engineering, University of Southern California, Los Angeles, CA, Fall 2007

Teaching Assistant, *2.12: Undergraduate Robotics Lab*, Mechanical Engineering Department, Massachusetts Institute of Technology, Cambridge, MA, Fall 2005

Instructor, *Introduction to Robotics*, MIT Saturday Engineering Enrichment and Discovery Program, Massachusetts Institute of Technology, Cambridge, MA, Spring 2006

Undergraduate Teaching Assistant, *2.002: Mechanics and Materials II*, Mechanical Engineering Department, Massachusetts Institute of Technology, Cambridge, MA, Spring 1998

Industrial Experience

Lawrence Livermore National Laboratories

Livermore, CA, Jun. 1999–Aug. 1999

Summer internship: Performed analysis of various finite element–testing programs to help evaluate fracture characteristics of nuclear waste containment vessels.

Boeing Flight Systems

Seattle, WA, Jun. 1998–Aug. 1998

Summer internship: Investigated various problems that arose on 747, 767, and 777 flight lines in the Fuel Systems group. Worked closely with engineers to process admission of new components for various airlines.

Amoco Polymers

Alpharetta, GA, Jul. 1997–Sept. 1997

Summer internship: Investigated the failure of polymer–based laptop connectors. Performed infra–red failure experiments on polymer tensile bars.

Publications

Refereed Journal Papers

- [J1] Wade, E. and Winstein, C.W.; *Spectral Analyses of Wrist Motion Data in Individuals Post Stroke: Developing a Performance Measure for Unsupervised Settings*, Neurorehabilitation and Neural Repair, *In submission*.
- [J2] Wade, E., Parnandi, A.R., Mead, R., and Matarić, M.M.; *Socially Assistive Robotics for Guiding Motor Task Practice*, Paladyn Journal of Behavioral Robotics, *In press*.
- [J3] Wade, E., and Winstein, C.W.; *Virtual Reality and Robotics for Stroke Rehabilitation: Where Do We Go from Here?*, Topics in Stroke Rehabilitation, 18(6), Nov.–Dec., 2011, pp.685–700.
- [J4] Wade, E., and Asada, H.H.; *Conductive Fabric Garment for a Cable-Free Body Area Network: Conductivity Analysis for DC Power-Line Communication over Fabric Media*, IEEE Pervasive Computing, 6(1), Jan.–Mar., 2007, pp.52–58.

- [J5] Wade, E., and Asada, H.H.; *Design of a Broadcasting Modem for a DC PLC Scheme*, IEEE/ASME Transactions on Mechatronics, 11(5), Oct. 2006 pp.533–540.

Book Chapters

- [B1] Wade, E. et al., “Assisted Ambient Living Applied to Remote Motor Rehabilitation” Handbook on Ambient Assisted Living, IOS Press, In press.
- [B2] Wade, E., Amirshahi, P., Ardakani, M., Berganza Valmala, I., Bumiller, G., Canete, F., Colavolpe, G., Dostert, K., Ferreira, H.C., Fertoni, D., Galli, S., Han Vinck, A.J., Hirsch, H., Hrasnica, H., Katayama, M., Kavehrad, M., Koch, M., Lampe, L., Latchman, H.A., Lee, S., Lobashov, M., Newbury, J., Oksman, V., Janse van Rensburg, P.A., Ribeiro, M.V., Sendin Escalona, A., Stockhammer, T., Swart, T.G., Tonello, A.M., Umehara, D., Yong, L.W., “Power Line Communications for Wearable Applications.” Power Line Communications, John Wiley and Sons, 2010.

Refereed Conference Papers & Abstracts

- [C1] Wade, E., Parnandi, A., and Matarić, M.J. *Using Socially Assistive Robotics to Augment Motor Task Performance in Individuals Post-Stroke*. In IEEE/RSJ International Conference on Intelligent Robots and Systems, San Francisco, California, Sept. 2011.
- [C2] Wade, E., Dye, J., Mead, R., and Matarić, M.J. *Assessing the Quality and Quantity of Social Interaction in a Socially Assistive Robot-Guided Therapeutic Setting*. In 12th IEEE International Conference on Rehabilitation Robotics, Zurich, Switzerland, Jun. 2011.
- [C3] Wade, E., Chen, S., and Winstein, C.J. *Determination of Nominal Task Difficulty of an Upper Extremity Motor Task Puzzle for Individuals Post-Stroke*, In proceedings, 2011 NASPSA Conference, Burlington, Vermont, Jun. 2011.
- [C4] Charalambous, C., Gerger, M., Cesar, G., Wade, E., Winstein, C.J. *Systematic Investigation of Anticipatory Planning in Goal-Directed Stepping*. In proceedings, 2011 NASPSA Conference, Burlington, Vermont, Jun. 2011.
- [C5] Charalambous, C., Lai, Y.H., Wade, E., and Winstein, C.J. *What factors are prioritized for planning actions that require goal-directed positioning?*, In Proceedings of Society for Neuroscience, San Diego, California, Nov. 2010.
- [C6] Mead, R., Wade, E., Johnson, P., St. Clair, A., Chen, S., and Matarić, M.J. *An Architecture for Rehabilitation Task Practice in Socially Assistive Human-Robot Interaction* In 19th IEEE International Symposium in Robot and Human Interactive Communication, Viareggio, Italy, Sept. 2010.
- [C7] Wade, E., Parnandi, A., and Matarić, M.J. *Automated Administration of the Wolf Motor Function Test for Post-Stroke Assessment*. In ICST 4th International ICST Conference on Pervasive Computing Technologies for Healthcare, Munich, Germany, Mar. 2010.
- [C8] Parnandi, A., Wade, E., and Matarić, M.J. *Motor Function Assessment Using Wearable Inertial Sensor*. Proceedings of the 32nd Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Buenos Aires, Argentina, Aug. 2010.
- [C9] Wade, E. and Matarić, M.J. *Design and Testing of Lightweight Inexpensive Motion-Capture Devices with Application to Clinical Gait Analysis*. In Proceedings of the International Conference on Pervasive Computing, London, England, Aug. 2009, pp.1–7.

- [C10] Tapus, A., **Wade, E.**, and Matarić, M.J. *Using a Socially Assistive Robot in Gait Recovery and Training for Individuals with Cognitive Impairments*. In AAAI Fall Symposium AI in Eldercare: New Solutions to Old Problems, Arlington, Virginia, Nov. 2008.
- [C11] **Wade, E.**, and Asada, H.H.; *DC Behavior of Conductive Fabric Networks with Application to Wearable Sensor Nodes, Wearable and Implantable Body Sensor Networks*, International Workshop on Body Sensor Networks, Boston, Massachusetts, Apr. 2006, pp.27–30.
- [C12] **Wade, E.**, and Asada, H.H.; *Cable-Free Body Area Network using Conductive Fabric Sheets for Advanced Human-Robot Interaction*, Proceedings of the 27th Annual International Conference of the Engineering in Medicine and Biology Society, Shanghai, China, Sept. 2005, pp.3530–3533.
- [C13] **Wade, E.**, and Asada, H.H.; *Electrostatic Analysis and Design of a Cable-Free Body Area Network of Sensor Nodes Using 2D Communication over Conductive Fabric Sheets*, In IEEE/RSJ International Conference on Intelligent Robots and Systems, Edmonton, Alberta, Aug. 2005, pp.3642–3647.
- [C14] **Wade, E.**, and Asada, H.H.; *Cable-free wearable systems using conductive fabrics transmitting signals and power*, Smart Structures and Materials: Smart Sensor Technology and Measurement Systems, Proceedings SPIE Vol. 5758, San Diego, California, 2005, pp.285–295.
- [C15] **Wade, E.**, and Asada, H.H.; *DC powerline communication network for a wearable health monitoring system*, International Symposium on Power Line Communications and Its Applications, Vancouver, Canada, Apr. 2005, pp.172–175.
- [C16] **Wade, E.**, and Asada, H.H.; *Cable-free wearable sensor system using a DC powerline body network in a conductive fabric vest*, Proceedings of the 26th Annual International Conference of the Engineering in Medicine and Biology Society, Volume 2, San Francisco, California, Sept. 2004, pp.5376–5379.
- [C17] **Wade, E.**, and Asada, H.H.; *Wearable DC powerline communication network using conductive fabrics*, IEEE International Conference on Robotics and Automation, Volume 4, New Orleans, Louisiana, Apr. 2004, pp.4085–4090.
- [C18] **Wade, E.**, and Asada, H.H.; *Flexible material handling system using smart-carriers and powerline communication*, IEEE International Conference on Robotics and Automation, Volume 2, Taipei, Taiwan, Sept. 2003, pp.1711–1716.
- [C19] **Wade, E.**, and Asada, H.H.; *Reduced cable smart motors communicating over the DC power bus-line for high degree of freedom systems*, In IEEE/RSJ International Conference on Intelligent Robots and Systems, Volume 2, Las Vegas, Nevada, Oct. 2003, pp.1987–1991.
- [C20] **Wade, E.**, and Asada, H.H.; *One-wire smart motors communicating over the DC power bus-line with application to endless rotary joints*, IEEE International Conference on Robotics and Automation, Volume 3, Washington, D.C., May 2002, pp.2369–2374.
- [C21] Liu, C.H., **Wade, E.**, and Asada, H.H.; *Reduced-cable smart motors using DC power line communication*, IEEE International Conference on Robotics and Automation, Volume 4, Seoul, South Korea, 2001, pp.3831–3838.

Invited Talks

- [T1] *Robots for Ambient Living: Cool, Practical, or Both?*, The Los Angeles/Orange County Chapter of the Association of Rehabilitation Nurses Workshop, Rancho Los Amigos National Rehabilitation Hospital, Downey, CA, Mar. 19, 2011.

- [T2] *VR and Robotics for Stroke Rehabilitation: Where Do We Go From Here?*, USC Division of Biokinesiology and Physical Therapy Seminar Series, University of Southern California, Los Angeles, CA, Oct. 28, 2010.
- [T3] *Imperceptible Wearable Sensing for Continuous Monitoring: Conductive Textiles*, 3rd IEEE-EMBS International Summer School and Symposium on Medical Devices and Biosensors, Cambridge, MA, Sept. 5-6, 2006.
- [T4] *Wearable Monitoring Applications*, Office of Engineering and Technology, Federal Communications Commission, Washington, D.C., Feb. 9, 2006.

Academic Honors and Awards

Training in Rehabilitation Efficacy and Effectiveness Trials (TREET) T32 Training Grant Recipient, University of Southern California, 2011-2013.

Best Paper Award Finalist, International Symposium on Robot and Human Interactive Communication, IEEE, 2010.

Best Paper Award Finalist, International Conference on Robotics and Automation, IEEE, 2003.

Leventhal Fellowship Recipient, Massachusetts Institute of Technology, 2002.

MIT Presidential Fellowship Recipient, Massachusetts Institute of Technology, 2000.

Silent Hoist & Crane Award for Mechanical Engineers, Massachusetts Institute of Technology, 1998.

Tau Beta Pi Member, Massachusetts Institute of Technology.

Pi Tau Sigma Member, Massachusetts Institute of Technology.

Patents

Melina Agosto, Teodoro Arvio, Sean Bradshaw, Scott Hiroshige, Nicole Thomas, Eric Wade; U.S. Patent 5915869 – “Ergonomic Cleaning Apparatus with Multiple Surfaces,” Issued Jun. 29, 1999.

Service

Technical Program Committees

Consumer Communications and Networking Conference (2010 to present)

Pervasive Computing Technologies for Healthcare (2010 to present)

International Conference on Health Informatics (2010 to present)

International Conference on Informatics in Control (2009 to present)

International Conference on Bio-inspired Systems and Signal Processing (2010 to present)

International Workshop on Intelligent Environments Supporting Healthcare and Well-being (2010 to present)

Reviews: Journal Papers

Journal of Experimental and Theoretical Artificial Intelligence
Transactions on Information Technology in Biomedicine
Sensors Journal

Reviews: Conference Papers

Engineering in Medicine and Biology
International Symposium on Robot and Human Interactive Communication
Pervasive Computing Technologies for Healthcare
International Conference on Robotics and Automation
International Conference on Biomedical Robotics and Biomechatronics

Professional Affiliations

Institute of Electrical and Electronics Engineers
American Society of Mechanical Engineers
Society for Neuroscience
North American Society for the Psychology of Sport and Physical Activity
American Society of Neurorehabilitation

University Organizations

Member, MIT Committee on Discipline, 2004–2006.
Orientation Co–Chair, MIT Graduate Student Council, 2004.
Co–Chair, MIT Black Graduate Student Association, 2003–2004.
Historian and member, Tau Beta Pi Engineering Honor Society, 1999.
Member, Pi Tau Sigma Mechanical Engineering Honor Society, 1999.