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EDUCATION

Ph.D. in Mechanical Engineering, Arizona State University, 2005
M.S. in Mechanical Engineering, University of New Mexico, 1997
B.S. in Mechanical Engineering, University of Missouri, 1994

SUMMARY

For more than 15 years Dr. Hollander has had extensive experience in analyzing and modeling, both biological and mechanical systems, as well as their interactions. This experience has included the design and development of numerous mechanical devices, robots and electronic measurement instruments.

At Augspurger Komm Engineering, Inc. his broad skill set and knowledge has been applied to the analysis of vehicular accidents/reconstruction, tire failures, equipment fires/failures and related personal injury.

EXPERIENCE

2006-Present Augspurger Komm Engineering, Inc., Senior Engineering Consultant
2006-Present SpringActive, Inc., Owner/Director of Product Development
2002-2005 Infinea Solutions, Inc., Owner/President
1998-2002 Barnes-Jewish Hospital, Clinical Research Manager/Engineer
1997 Saint Charles Community College, Adjunct Faculty in Mechanical Design
1996-1997 Independent Consulting
1992 Union Electric, Co. – Rush Island Power Plant, Engineer
1991 GenCorp Automotive, Engineer

PROFFESIONAL AFFILIATIONS

American Society of Mechanical Engineers (ASME Member)
American Society of Testing and Materials (ASTM) International
Mechanical Engineering Graduate Association (MEGA), President 1996-1997
Society of Automotive Engineers (SAE Member) International - UNM Formula Car
Team Advisor 1996-1997

SEMINARS

Forensic Photography Techniques, Michael Wilson, Phoenix, AZ, December 18, 2008
Vehicle Accident Reconstruction Methods, April 19-20, 2007 – Society of Automotive Engineers (SAE), Detroit, MI.
Introduction to PC Crash and PC-Rect, August 22-23, 2006 – MEA
Introduction to Major Testing Techniques for Plastics, September 20-22, 2005
ASTM International, San Diego, CA.

AWARDS

2005 Second Place, ASME Student Mechanism Design Competition (Graduate Division)
1997 Regional Award, ASME New Mexico Senior Section Web Page

PROFESSIONAL ACTIVITIES

Reviewer for various IEEE, ASME conference and journal publications 2005 ASME IDETC
Session Co-Chair

THESIS TOPICS

2005 Ph.D. Thesis, Development of Compliant Actuation Systems for Wearable Robotics Applications
1997 Masters Thesis, Mechanical Loading of Tendon: Experimental Apparatus and Modeling
1994 Undergraduate Research, Cortical Bone as an Engineering Material

RESEARCH SUPPORT

2009 Army - Natick Soldier Systems, *Soldier Power Regeneration Kit (SPaRK)*, (\$150,000), 1 year, (*Subcontract PI/\$99k subcontract*)
2009 Nation Science Foundation (NSF). *Compliant Jack Spring Actuators for Lower Limb Mobility*. SBIR (\$100,000), 6 months. (*Primary Investigator*)
2006 Army - TATRC/Walter Reed Hospital, *SPARKY-Spring Ankle with Regenerative Kinetics*, (\$605,000), 3 years. (*Consultant*)
2005 National Institutes of Health (NIH). *Robotic Spring Ankle for Gait Assistance, Development and Evaluation*. (\$359,000). 2 years. (*Consultant*)
2003 National Institutes of Health (NIH). *Radio Frequency Motion Tracking System*. SBIR (\$95,002), 1 year. (*Inventor/Author/ Consultant*)

INVITED TALKS

MAE Seminar, 2005. "Robotic Tendon for Ankle Gait Assistance." Arizona State University, February.

Lecture, 2003. "Current Research in Robotics". Tempe Public Library, September.

Lecture Series, 2003. "MAE 446: Lectures on ANSYS/FEA". Arizona State University, Spring.

PATENTS

2005 US20070040312, *Awarded*, Adjustable Stiffness Leaf Spring Actuators

2005 US20070267791, *Pending*, Adjustable Stiffness Jack Spring Actuator

2003 US20040196184, *Submitted*, Method and Apparatus for Determining the Position and Orientation of an Object using a Doppler Shift of Electromagnetic Signals

BOOKS/CHAPTERS

Hollander, KW, and Sugar TG, 2007, "Chapter 12: Powered Human Gait Assistance", In Kommu, SS, (ed.), *Rehabilitation Robotics*, I-Tech Education and Publishing, pp. 203-220.

JOURNAL PUBLICATIONS

J11. Hitt, J, Holgate, M, Bellman, R, Sugar, TG, Hollander, KW, 2009, "Robotic Transtibial Prosthesis with Biomechanical Energy Regeneration", *Industrial Robot: An International Journal*, 36(5), pp. 441-447.

J10. Van Ham, R, Sugar, TG, Vanderborght, B, Hollander, KW, Lefeber, D, 2009, "Review of Actuators with Passive Adjustable Compliance / Controllable Stiffness for Robotic Applications", *IEEE Robotics & Automation Magazine*, 16(3), pp. 81-94, September.

J9. Vanderborght, B, Van Ham, R, Sugar, TG, Hollander, KW and Lefeber, D, 2009, "Comparison of Mechanical Design and Energy Consumption of Adaptable Passive Compliant Actuators." *International Journal of Robotics Research*, 28(1), pp. 90-103, January.

J8. Ward, J, Boehler, A, Shin, D, Hollander, KW and Sugar, TG, 2008, "Control Architectures for a Powered Ankle Foot Orthosis," *International Journal of Assistive Robotics and Mechatronics*, 9(2), pp. 2-13.

J7. Hollander, KW, Ilg, R, Sugar, TG, Herring, DE. 2006. "An Efficient Robotic Tendon for Gait Assistance." *ASME Journal of Biomechanical Engineering*, 128(5), pp. 788-791, October.

JOURNAL PUBLICATIONS (Continued)

J6. Hollander, KW and Sugar, TG. 2006. "Design of Lightweight Lead Screw Actuators for Wearable Robotic Applications." ASME Journal of Mechanical Design, 128(5), pp. 644-648, May.

J5. Engsborg, JR, Lenke, LG, Hollander, KW, Urich, ML, Commean, PK, Lee, JR, Bae, KT. 2003. "Methods to Locate Center of Gravity in Scoliosis". Spine, 28(23), pp. E483-489, December.

J4. Hampton, DA, Hollander, KW, Engsborg, JR. 2003. "Equinus Deformity as a Compensatory Mechanism For Ankle Plantarflexor Weakness." Journal of Applied Biomechanics, 19(4), pp. 325-339.

J3. Engsborg, JR, Lenke, LG, Reitenbach, AK, Hollander, KW, Bridwell, KH, Blanke, K. 2002. "Prospective Evaluation of Trunk Range of Motion in Adolescents with Idiopathic Scoliosis Undergoing Spinal Fusion Surgery." Spine. 27(12), pp.1346-1354.

J2. Engsborg, JR, Wagner, JM, Reitenbach, AK, Hollander, KW, Standeven, JW. 2001. "A Measure of Motor Control at the Knee in Cerebral Palsy." Journal of Applied Biomechanics. 17(4), pp.335-343.

J1. Engsborg, JR, Ross, SA, Hollander, KW, Park, TS, 2000, "Hip Spasticity and Strength in Children with Spastic Diplegia Cerebral Palsy", Journal of Applied Biomechanics, 16(3), pp. 221-233.

CONFERENCE PUBLICATIONS/PRESENTATIONS

C20. Beebe, E, Hollander, KW, Komm, DS, Springer, T, 2009, "Non-destructive examination techniques of plastics", Proceeding of the ASME Early Career Technical Conference, Arlington, TX, April.

C19. Holgate, M, Hitt, J, Bellman, R, Sugar, TG, Hollander, KW, 2008, "The SPARKy (Spring Ankle with Regenerative Kinetics) Project: Choosing a DC Motor Based Actuation Method", IEEE International Conference on Biomedical Robotics and Biomechatronics (BIOROB2008), Scottsdale, AZ, October.

C18. Komm, DS, Hollander, KW, Beebe, EA, McSpadden, HJ, 2008, "Steps Used to Analyze the Failure of an Exterior Suspended Ceiling," International Symposium on Safety Science and Technology (2008ISSST), Beijing, China, September.

CONFERENCE PUBLICATIONS/PRESENTATIONS (Continued)

C17. Boehler A, Hollander K, Sugar T, Shin D, 2008, "Design, Implementation and Test Results of a Robust Control Method for a Powered Ankle Foot Orthosis (AFO)", IEEE International Conference on Robotics and Automation (ICRA2008), Pasadena, CA, May.

C16. Hitt, J, Bellman, R, Holgate, M, Sugar, TG, Hollander, KW, 2007, "The SPARKY (Spring Ankle with Regenerative Kinetics) Project: Design and Analysis of a Robotic Transtibial Prosthesis with Regenerative Kinetics", #DETC2007-34512, ASME International Design Engineering Technical Conference (IDETC2007), Las Vegas, NV, September.

C15. Hollander, KW, Sugar, TG. 2007. "A Robust Control Concept for Robotic Ankle Gait Assistance" International Conference of Rehabilitation Robotics (ICORR2007), Noordwijk, Netherlands, June.

C14. Hitt, J, Oymagil, AM, Sugar, T, Hollander, K, Boehler, A, Fleeger, J., 2007. "Dynamically Controlled Ankle-Foot Orthosis (DCO) With Regenerative Kinetics: Incrementally Attaining User Portability." IEEE International Conference on Control and Automation (ICRA2007), Roma, Italy, April.

C13. Hollander, KW, Sugar, TG, Herring, DE. 2005. "A Robotic 'Jack Spring' for Ankle Gait Assistance." #DETC2005-84492, ASME International Design Engineering Technical Conference (IDETC2005), Long Beach, CA, September.

C12. Hollander, KW and Sugar, TG. 2005. "Design of Lead Screw Actuators for Wearable Robotic Applications." #DETC2005-84595, ASME International Design Engineering Technical Conference (IDETC2005), Long Beach, CA, September.

C11. Hollander, KW, Sugar, TG, Herring, DE. 2005. "Robotic 'Jack Spring' for Ankle Gait Assistance." International Conference of Rehabilitation Robotics (ICORR2005), Chicago, IL, June.

C10. Hollander, KW, Sugar, TG. 2005. "Design of the Robotic Tendon." Design of Medical Devices Conference (DMD2005), Minneapolis, MN, April.

C9. Bharadwaj, K, Hollander, KW, Mathis, C, Sugar, TG. 2004. "Spring over Muscle (SOM) Actuator for Rehabilitation Devices." IEEE Engineering in Medicine and Biology Society (EMBS2004), San Francisco, CA, September.

C8. Hollander, KW, Sugar, TG. 2004. "Concepts for Compliant Actuation in Wearable Robotic Systems", Invited Paper, US-Korea Conference on Science, Technology and Entrepreneurship (UKC2004), Research Triangle Park, NC, August.

CONFERENCE PUBLICATIONS/PRESENTATIONS (Continued)

C7. Standeven, JW, Engsberg, JR, Lefrak, SS, Wagner, JM, Hollander, KW, Cooper, JD. 2004. "Quantifying Pulmonary Function During Gait Using Video Motion Capture." Gait and Clinical Movement Analysis Society (GCMAS2004), Lexington, KY, April.

C6. Wang, Z, Hollander, KW, Sugar, TG. 2003, "A Novel Omni-Directional Perturbation Platform." Proceedings of Intelligent Robots and Systems (IROS2003), Las Vegas, NV, October.

C5. Engsberg, JR, Lenke, LG, Hollander, KW, Urich, ML, Comean, PD, Bae, KT. 2002. "Center of Gravity (COG) in Scoliosis." Presented at the Scoliosis Research Society annual meeting. Seattle, WA

C4. Engsberg, JR, Lenke, LG, Hollander, KW, Urich, ML, Bridwell, KH. 2002. "Changes in Trunk Range of Motion following Anterior or Posterior Spinal Fusion in Adolescent Idiopathic Scoliosis." Presented at the Scoliosis Research Society annual meeting. Seattle, WA

C3. Engsberg, JR, Lenke, LG, Hollander, KW, Reitenbach, AK, Bridwell, KH. September, 2001. "Trunk Motion in Adolescents Undergoing Scoliosis Spinal Fusion." Presented at the Scoliosis Research Society Annual Meeting. Cleveland, Ohio.

C2. Engsberg, JR, Ross, SA, Hollander, KW, Park, TS. September, 2000. "Hip Abductor/Adductor Spasticity and Strength in Children with and without Cerebral Palsy." Presented at the American Academy of Cerebral Palsy and Developmental Medicine Annual Meeting. Toronto, Canada.

C1. Wagner, JM, Engsberg, JR, Hollander, KW, Olree, KS. August, 1999. "A Method for Quantitative Analysis of Continuous Kinematic Gait Variables." Presented at the International Society of Biomechanics Convention. Calgary, Canada.