

Adam Arabian Ph.D., P.E.
Assistant Professor
Seattle Pacific University
3307 Third Avenue West, Suite 307
Seattle, WA 988119
arabian@spu.edu

I. EDUCATION

Certificate in Anti-Submarine Warfare; May, 2010

Naval Postgraduate School, Monterey, California

Ph.D. in Mechanical Engineering; May, 2008

University of Louisville, Louisville, Kentucky

Dissertation: *Analysis of the Transport of Aerosols in a Heating, Ventilation, and Air Conditioning (HVAC) System*

Advanced Certificate for Post Masters Study in Applied Biomedical Engineering; August, 2002

The Johns Hopkins University, Baltimore, Maryland

Master of Science in Mechanical Engineering; May, 2000

Michigan State University, East Lansing, Michigan;

Thesis: *Development and Validation of a Kinematic Model of the Equine Tarsal Joint*

Bachelor of Science in Mechanical Engineering, May, 1998

Purdue University, West Lafayette, Indiana

II. ACADEMIC APPOINTMENTS

SEATTLE PACIFIC UNIVERSITY

Seattle, WA

September 2012 - Present

Teaching Responsibilities:

- Instructor for mechanical and thermal-fluids courses in the mechanical concentration / general engineering program: **Thermodynamics, Fluid Dynamics, Heat Transfer, Statics, Dynamics, Mechanics of Materials, Third and Fourth Year Capstone Design Courses**
- Instructor for freshman Introduction to Engineering / University Seminar course

Administrative Responsibilities

- **Coordinator for General Engineering Programs (2013-Present):** responsible for curriculum development, course planning and scheduling, and student advising

University Governances or other committees

- **Faculty Development Committee (2013-Present):** Committee member, supporting various efforts to improving faculty professional development; **Team Lead:** Course evaluation review and analysis

III. PEER REVIEWED PUBLICATIONS

- Arabian, A; Schull, J.; Bastian, A, Flood, F.; Owen, I.; Zuniga, J. e-NABLE: Collaborative innovation of, by, and for the global village. Proceedings of the IEEE Global Humanitarian Development Conference. 2014
- Daly, W; Voo, L; Rosenbaum-Chou, T; Arabian, A; Boone, D. Socket Pressure and Discomfort in Upper-Limb Prostheses: A Preliminary Study. *Journal of Prosthetics and Orthotics* 26 (2014): 99-106.
- Gacioch, J; Fite, K; Arabian, A; Kobayashi, T, Boone, D; Orendurff, M. An Architecture for Direct Measurement of Transfemoral Prosthesis Gait Beyond the Gait Laboratory Setting. Proceedings of the ASME Dynamic Systems Control Conference . 2014. 8.
- Kobayashi, T.; Orendurff, M.; Arabian, A; Rosenbaum-Chou, T; Boone, D. "Effect of prosthetic alignment changes on socket reaction moment impulse during walking in transtibial amputees." *Journal of Biomechanics* 47 (2014): 1315-1323.
- Kobayashi, Toshiki; Arabian, Adam; Orendurff, Michael; Rosenbaum-Chou, Teri; Boone, David. "Effect of alignment changes on socket reaction moments while walking in transtibial prostheses with energy storage and return feet." *Clinical Biomechanics* 20 (2014): 47-56.
- Hilary M. Clayton, Jonathan Merritt, Anton J. Van den Bogert, Franca Jonquiera, Adam Arabian. "Modeling, simulation and animation." *Equine Locomotion*. Ed. Back, W. (Wim); Hilary Clayton. 2nd. Philadelphia: Saunders, 2013. 414-440.
- Boone DA, Kobayashi T, Chou TG, Arabian AK, Coleman KL, Orendurff MS, Zhang M. Influence of Malalignment on Socket Reaction Moments During Gait in Amputees with Transtibial Prostheses. *Gait and Posture* 37 (2013): 620-626.
- Perception of socket alignment perturbations in amputees with transtibial prostheses. *Journal of Rehabilitation Research and Development* 2012; 49:843-854.
- Boone, D., Kobayashi, T., Chou, T., Arabian, A., Coleman, K., Orendurff, M., Zhang, M. Immediate Effect of Transtibial Prosthesis Alignment Perturbations on Socket Reaction Moments as Measured by an Instrumented Prosthesis Alignment Component. *Archives of Physical Medicine and Rehabilitation*, Submitted
- Boone, D., Kobayashi, T., Chou, T., Arabian, A., Coleman, K., Orendurff, M., Zhang, M. Effect of Transtibial Prosthetic Malalignment on Socket Reaction Moments. *Proceedings of the 38th Annual AAOP Symposium*, 2012
- Boone, D., Kobayashi, T., Chou, T., Arabian, A., Coleman, K., Orendurff, M., Zhang, M. Predictive Models of Transtibial Prosthetic Malalignment Based on Socket Reaction Moments. *Proceedings of the 38th Annual AAOP Symposium*, 2012
- Arabian, A.K. Synergy in Green Power Production Methods and Siting, *International Journal of Green Energy* 2 143-152, (2010)
- Equilibrium Socket System (USPTO Application 20130178950); A. Arabian, D. Boone
- Prosthetic Hydraulic Joint with Accumulator and Methods for Controlling Unit (USPTO Application US20130173022); A. Arabian, D. Boone, B. Macomber, T. Butel, R. Lane
- Fall Risk Assessment Device and Method (USPTO Application 20120119904); K. Coleman, D. Boone, A. Arabian, M. Orendurff
- Control system for prosthesis (USPTO Application US20110060421); J. Martin, P. Chaubey, D. Boone, M. Kozlowski, A. Arabian
- Method and Apparatus for detection of BioAerosols (USPTO Patent Application US20110049390 - Note: unique application from USPTO patent 7,494,769 and 7830515 below); C. Schein, P. Cutchiss, A. Arabian, H. Ko, J. Sample, G. Murray, J. Nix, M. Carlson, M. McLoughlin

IV. ACADEMIC PEER-REVIEWED PRESENTATIONS

- Yancey K, Arabian AK; Low Cost Universal Testing Device for Measurement of Spring Coefficients in Energy Storage and Return (ESR) Prosthetic Feet , *Presented at the Murdock College Science Research Conference*, Vancouver, WA, November 2013

V. PEER REVIEW EXPERIENCE

- Reviewer: Journal of Prosthetics and Orthotics, International Journal of Science and Engineering Technology Education, Journal of Rehabilitation Research and Development
- Member, DoD Medical Device grant review panel (2015), NIH MRS grant review panel (2013)

VI. RELATED WORK EXPERIENCE

Refugee Open Ware; Amman, Jordan; September 2014-Current

- Technical Director, advising on and implementing technical direction and decision making at ROW relating to engineering design, custom fabrication, and fitting of low-cost custom prosthetic devices for refugees from the Syrian conflict

3D Life Prints; Nairobi, Kenya; March 2015-Current

- Senior Technical Advisor, advising on technical decision making for prosthetic devices, 3D printed medical/surgical analogues, and mine risk education initiatives

National Syrian Project for Prosthetic Limbs; Reyhanli, Turkey; May 2015-Current

- Technical Advisor, providing logistical and research guidance for clinic that provides free of cost prosthetic devices to Syrian refugees.

Orthocare Innovations; Mountlake Terrace, Washington; July 2009-September 2012

- Director of Product Engineering, leading 8 member research and development team in rapid cycle startup engineering projects focused on cutting edge prosthetic components. Responsibilities included engineering, personnel, salary, and retention prioritization and decisions.
- Drove two major projects from concept to manufacturing and directed and managed numerous smaller development projects including three NIH SBIR granted research programs cumulatively worth \$1.5M
- PI or primary drafter of two NIH SBIR grants with value in excess of \$1M, third pending review valued at \$1.1M
- Research on pediatric prostheses featured in *O&P Edge*, a leading prosthetics trade magazine (April 2011, "*Helping kids with their leaps and bounds*")

Johns Hopkins University Applied Physics Lab; Laurel, Maryland

Institute for Bioengineering, January 2006 – March 2009, 30 Hours/Week (Part-time work while completing Ph.D)

- Lead engineer directing activities of 40+ members from international academia, industry, and government for 3.5M+ development of advanced prosthetic limb for the warfighter

National Security Technology Department, July 2001 – January 2006

- Obtained official commendation from sponsoring governmental agency for leading a team in rapidly designing, deploying, and supporting equipment for evaluating and mitigating potential chemical and biological threats to governmental mail
- Directed and conducted tests on aerosol collections in a BSL II lab for efficiency studies.
- Supported field deployment of air sampling equipment for chemical and biological component analysis.
- Developed C++ and Visual Basic software code for system integration and data collection in adverse environments.
- Developed fluidics system for aerosol evaluation and triggering system
- Developed test plans and supported tests on chemical warfare agent detection systems.

- Developed novel mine and UXO-countermeasure autonomous robot

Strategic Systems Group, PTM, June 2000 – July 2001

- Performed analysis on and supported at sea operational testing of the Trident and Trident II submarine fleet launcher systems
- Developed and implemented 6 degree-of-freedom simulation of U.S. Navy Advanced Seal Deployment System (ASDS)

United States Navy

- NAVSEA Columbus; Training and Projects Officer: NOSC Columbus, Columbus, OH; April 2005-August 2007
- Assault Craft Unit One Det 1813; Chief Engineer: NOSC Chicago, Chicago, IL: September 2007-May2009
- Puget Sound Naval Shipyard and IMF SurgeMain Headquarters Detachment; Executive Officer: NOSC Kitsap, Bremerton, Washington:

VII. PROFESSIONAL ASSOCIATIONS AND CERTIFICATIONS

- American Society of Mechanical Engineers
- Institute of Electrical and Electronics Engineers
- Professional Engineer, Mechanical Engineering (Licensed in Washington State)
- DAWIA Level I Certified in Systems Engineering