

# Devin R. Berg

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## Professional Interests

Experiential learning in engineering education  
International Engineering Development/Global Engineering  
Mechatronics, automation, and robotics  
Bio-inspired engineering and design  
Additive manufacturing  
Open practices in engineering

## Education

2013 | **PhD Mechanical Engineering**, University of Minnesota - Twin Cities  
2011 | **MS Mechanical Engineering**, University of Minnesota - Twin Cities  
Minor: Biomedical Engineering  
2008 | **BS Mechanical Engineering**, University of Wisconsin - Madison

## Academic Positions

2019 | **Research Fellow**, University of Wisconsin - Stout  
2016–present | **Associate Professor**, University of Wisconsin - Stout  
2015–present | **Program Director**, Mechanical Engineering, University of Wisconsin - Stout  
2016 | **Visiting Professor**, University of Applied Sciences - Upper Austria  
2014–2016 | **Program Director**, Manufacturing Engineering, University of Wisconsin - Stout  
2012–2016 | **Assistant Professor**, University of Wisconsin - Stout  
2015 | **Research Scholar**, Discovery Center, University of Wisconsin - Stout  
2012 | **Adjunct Faculty**, University of St. Thomas  
2011–2012 | **Lab Supervisor**, Medical Devices Center  
2010–2012 | **Teaching Assistant**, University of Minnesota - Twin Cities  
2008–2012 | **Graduate Research Assistant**, University of Minnesota - Twin Cities

## Peer Reviewed Journal Articles

- 2018 D.R. Berg, P.Y. Li, and A.G. Erdman. Selection of artificial muscle actuators for a continuum manipulator. 2018. under review
- 2018 D.R. Berg and P.Y. Li. Hydraulic valve for miniature surgical robot applications. 2018. under review
- 2018 J. Dekarske and D. R. Berg. Path oriented powered wheelchair navigation assistance. 2018. under review
- 2018 D.R. Berg and K.E. Niemeyer. The case for openness in engineering research. *F1000Research*, 7(501), 2018
- 2018 D.S. Katz, G. Allen, L.A. Barba, D.R. Berg, et al. The principles of tomorrow's university. *F1000Research*, 7(1926), 2018
- 2017 J.P. Tennant, J.M. Dugan, D.R. Berg, et al. A multi-disciplinary perspective on emergent and future innovations in peer review. *F1000Research*, 6(1151), 2017. Jean-Claude Guédon Prize
- 2016 D. R. Berg, T. Lee, and E. Buchanan. A methodology for exploring, documenting, and improving humanitarian service learning in the university. *Journal of Humanitarian Engineering*, 2016
- 2015 D. R. Berg. Twitter in the engineering classroom. *Journal of Online Engineering Education*, 6(2), 2015
- 2010 Z. G. Liu, D. R. Berg, V. N. Vasys, M. E. Dettmann, B. Zielinska, and J. J. Schauer. Analysis of C1, C2, and C10 through C33 particle-phase and semi-volatile organic compound emissions from heavy-duty diesel engines. *Atmospheric Environment*, 44(8):1108–1115, 2010
- 2009 Z. G. Liu, D. R. Berg, T. A. Swor, J. J. Schauer, and B. Zielinska. A study on the emissions of chemical species from heavy-duty diesel engines and the effects of modern aftertreatment technology. *SAE Technical Paper Series 2009-01-1084*, 2009
- 2009 J. Schmidt, D. R. Berg, L. Ploeg, and H. L. Ploeg. Precision, repeatability and accuracy of optotrak optical motion tracking systems. *International Journal of Experimental and Computational Biomechanics*, 1(1):114–127, 2009
- 2008 Z. G. Liu, D. R. Berg, and J. J. Schauer. Effects of a zeolite-selective catalytic reduction system on comprehensive emissions from a heavy-duty diesel engine. *Journal of the Air & Waste Management Association*, 58(10), 2008
- 2008 Z. G. Liu, D. R. Berg, T. A. Swor, and J. J. Schauer. Comparative analysis on the effects of diesel particulate filter and selective catalytic reduction systems on a wide spectrum of chemical species emissions. *Environmental Science and Technology*, 42(16):6080–6085, 2008
- 2008 Z. G. Liu, D. R. Berg, and J. J. Schauer. An analysis of methods for measuring particulate matter mass emissions. *SAE Technical Paper Series 2008-01-1748*, 2008
- 2008 Z. G. Liu, D. R. Berg, and J. J. Schauer. Detailed effects of a diesel particulate filter on the reduction of chemical species emissions. *SAE Technical Paper Series 2008-01-0333*, 2008

## Invited Talks

- 2019 E. Buchanan, T. Lee, and D. R. Berg. Collaborations Across Campus: Bringing Ethics and Social Science to the Engineering Classroom. In *Polytechnic Summit*, Menomonie, WI, 2019
- 2019 T. Lee, E. Buchanan, and D. R. Berg. Visions of Alternative Development in Engineers Without Borders: Possibilities and Constraints. In *Proceedings of the 2019 Society for Applied Anthropology Annual Meeting*, Portland, OR, 2019
- 2018 D. R. Berg. Robot Integrations in the Home and Workplace from an Assistive Technology Perspective. 3M Tech Forum, 2018
- 2018 D. R. Berg. Opportunities to Improve Academic Research through Open Research Practices. In *Polytechnic Summit*, Lima, Perú, 2018
- 2018 E. Buchanan, T. Lee, and D. R. Berg. Supporting the Success of Service Learning Initiatives in Higher Education. In *Polytechnic Summit*, Lima, Perú, 2018
- 2018 D. R. Berg. Open and Engineering. Open Access Evening, McMaster University, 2018
- 2017 T. Lee, D. R. Berg, and E. Buchanan. Exploring social science research methods for engineers. In *Proceedings of the 2017 EWB-USA Conference*, Milwaukee, WI, 2017. EWB-USA
- 2017 A. Aspuru-Guzik, S. Schmid, D. R. Berg, N. Thakur, and C. Strasser. Panel discussion: Perspectives from arXiv, bioRxiv, engrXiv and funders of research. American Chemical Society National Meeting, 2017
- 2017 D. R. Berg. Open Engineering. University of California-Davis Mechanical and Aerospace Engineering Seminar, 2017
- 2017 D. R. Berg. Assistive Technology as a Freshmen Design Experience. Stout University Foundation Board Meeting, 2017
- 2015 D. R. Berg and A. Roush. Engineering to Help. Keynote address: Smart Girls Rock!, Menomonie Middle School, 2015
- 2015 D. R. Berg. Engineers Without Borders USA at UW-Stout. Menomonie Rotary and Menomonie Sunrise Rotary, 2015
- 2014 D. R. Berg. HandsOnMechanics.org: A repository for demonstrations and other resources to promote best practices in the mechanics classroom. In *Proceedings of the 2014 ASEE Annual Conference*, Indianapolis, IN, 2014. ASEE
- 2013 D. R. Berg. Surgical robotics under fluid power. In *Proceedings of the 2013 Design of Medical Devices Conference*, Minneapolis, MN, 2013. ASME
- 2010 D. R. Berg, P. Y. Li, A. G. Erdman, T. Cui, and T. P. Kinney. Robotic, multi-articulated endoscopic surgical tools for natural orifice transluminal endoscopic surgery. In *Doctoral Consortium for Medical Simulation and Robotics, American College of Surgeons Accredited Education Institutes Consortium*, Chicago, IL, 2010

## Peer Reviewed Conference Proceedings

- 2019 T. Lee, E. Buchanan, and D. R. Berg. Impacts of engineering justice curriculum: A survey of student attitudes. In *Proceedings of the 2019 ASEE Annual Conference*, Tampa, FL, 2019. ASEE. under review
- 2018 R. Coulson, Kirkpatrick M., M. Robinson, M. Donahue, and D. R. Berg. User testing of a continuum manipulator for assistive technology. In *Proceedings of the 2018 Rehabilitation Engineering and Assistive Technology Society of North America Annual Conference*, Arlington, VA, 2018. RESNA
- 2018 T. Lee, D. R. Berg, and E. Buchanan. Challenges and opportunities in international service learning. In *Proceedings of the 2018 ASEE Annual Conference*, Salt Lake City, UT, 2018. ASEE
- 2017 D.R. Berg, M. Donahue, M. Wigdahl, and C. Collins. Mechatronics workshop for elementary school outreach. In *Proceedings of the 2017 ASEE North Midwest Section Conference*, Minneapolis, MN, 2017. ASEE
- 2017 T. Lacksonen, S. Springer, and D.R. Berg. Global engineering projects from the Young African Leaders Initiative. In *Proceedings of the 2017 ASEE Annual Conference*, Columbus, OH, 2017. ASEE
- 2017 T. Lee, D. R. Berg, and E. Buchanan. Exploring, documenting, and improving humanitarian service learning through Engineers Without Borders USA. In *Proceedings of the 2017 ASEE Annual Conference*, Columbus, OH, 2017. ASEE
- 2017 D.R. Berg and M. Wigdahl. Assistive technology for freshmen design and k-12 outreach. In *Proceedings of the 2017 ASEE Annual Conference*, Columbus, OH, 2017. ASEE
- 2016 D. R. Berg and T. Lee. Incorporation of liberal education into the engineering curriculum at a polytechnic. In *Proceedings of the 2016 ASEE Annual Conference*, New Orleans, LA, 2016. ASEE
- 2015 D. R. Berg. Use of a rube goldberg design project for engineering dynamics. In *Proceedings of the 2015 ASEE Annual Conference*, Seattle, WA, 2015. ASEE
- 2015 D. R. Berg. The relationship between class size and active twitter participation in the engineering classroom. In *Proceedings of the 2015 ASEE Annual Conference*, Seattle, WA, 2015. ASEE
- 2014 D. R. Berg. Evaluation of student learning outcomes due to self-guided engineering analysis of surroundings. In *Proceedings of the 2014 ASEE Annual Conference*, Indianapolis, IN, 2014. ASEE. Mechanics Division Best Paper Award
- 2013 D. R. Berg. Experiences with inquiry-based learning in an introductory mechanics course. In *Proceedings of the 2013 ASEE North Midwest Section Conference*, pages 318–324, Fargo, ND, 2013. ASEE
- 2013 F. Capaldi and D. R. Berg. Outcomes of using an infinitely explorable online learning system. In *Proceedings of the 2013 ASEE Annual Conference*, Atlanta, GA, 2013. ASEE
- 2012 D. R. Berg, P. Y. Li, and A. G. Erdman. Achieving dexterous manipulation for minimally invasive surgical robots through the use of hydraulics. In *Proceedings of the 2012 ASME Dynamic Systems and Control Conference*, Fort Lauderdale, FL, 2012. ASME. (Best Paper in Session)
- 2012 D. R. Berg, L. A. Harder, and A. G. Erdman. Generating interest in technology and medical devices through an interactive educational game. In *Proceedings of the 2012 ASEE Annual Conference*, San Antonio, TX, 2012. ASEE
- 2011 D. R. Berg, T. P. Kinney, P. Y. Li, and A. G. Erdman. Determination of surgical robot tool force requirements through tissue manipulation and suture force measurement. In *Proceedings of the 2011 Design of Medical Devices Conference*, Minneapolis, MN, 2011. ASME
- 2011 D. R. Berg, A. Carlson, W. K. Durfee, R. M. Sweet, and T. Reihsen. Low-cost, take-home, beating heart simulator for health-care education. In *Proceedings of Medicine Meets Virtual Reality 48*, Newport Beach, CA, 2011

## Honors and Awards

2018	UW-Stout Outstanding Emerging Researcher Award
2017	ASEE Ferdinand P. Beer and E. Russell Johnston Jr. Outstanding New Mechanics Educator Award
2017	ASEE Campus Representative North Midwest Section Recruitment Award
2016	UW-Stout Diversity Award (Team Category)
2016	Discovery Center Collaborator of the Year
2014	ASEE Mechanics Division Best Paper Award
2008–2012	3M Science and Technology Fellowship

## Grants - Awarded

2017	D. R. Berg. Professional Development: Enhancing Student Success through a Model “Introduction to Engineering” Course. University of Wisconsin - Stout, 2017. Amount Awarded: \$664
2017	D. R. Berg. College Collaboration: Assistive Technology as a Freshmen Design Experience. University of Wisconsin - Stout, 2017. Amount Awarded: \$2,000
2015	W. V. Shi, C. A. Anderson, D. R. Berg, and C. C. Liu. REU Site: Interdisciplinary Research Experiences in Robotics for Assistive Technology. National Science Foundation - Research Experiences for Undergraduates, 2015. Amount Awarded: \$230,400
2015	D. R. Berg. Professional Development: Presentation at the 2016 American Society for Engineering Education Annual Conference. University of Wisconsin - Stout, 2015. Amount Awarded: \$1,500
2015	E. Buchanan, D. R. Berg, and T. Lee. Exploring, Documenting, and Improving Humanitarian Service Learning through Engineers Without Borders USA. National Science Foundation - Cultivating Cultures for Ethical STEM, 2015. Amount Awarded: \$454,065
2015	W.V. Shi, D. R. Berg, and C.C. Liu. Research Incubator Grant: Development of a NSF REU Proposal in Robotics and Control Systems. University of Wisconsin - Stout, 2015. Amount Awarded: \$10,000
2014	D. R. Berg. Professional Development: Presentation at the 2015 American Society for Engineering Education Annual Conference. University of Wisconsin - Stout, 2014. Amount Awarded: \$1,874
2014	F. M. Capaldi and D. R. Berg. An Intelligent Infinitely Explorable Online Learning Environment (Re-Submission). National Science Foundation - STTR Phase I, 2014. Amount Awarded: \$224,802
2014	D. R. Berg and W. Stary. STEPS for Girls and FIRST LEGO League Competition at the University of Wisconsin-Stout. Xcel Energy Foundation, 2014. Amount Awarded: \$8,000
2013	D. R. Berg. Professional Development: Presentation at the 2014 American Society for Engineering Education Annual Conference. University of Wisconsin - Stout, 2013. Amount Awarded: \$1,550
2013	D. R. Berg. Initiation Grant: Design and Control of a Desktop Laser Welder Positioning System. University of Wisconsin - Stout Discovery Center, 2013. Amount Awarded: \$15,834

## Service to the Field

2018–present	Organizing Committee: 2019 Polytechnic Summit
2018–present	Chair: ASEE Mechanics Division
2016–present	Member: Center for Open Science Preprint Advisory Group
2016–present	Director: engrXiv, the eprint server for engineering
2016–present	Founding Editor: The Journal of Open Engineering
2016–present	Secretary: Faculty Leadership Council, Engineers Without Borders USA
2013–present	Trustee: handsonmechanics.org (ASEE Mechanics Division)
2013–present	Reviewer: ASEE Annual Conference
2017–2018	Program Chair: ASEE Mechanics Division
2017–2018	Member: EWB-USA Diversity and Inclusivity Workgroup
2017–2018	Subject Matter Expert: McGraw Hill Education
2013–2017	Director: ASEE Mechanics Division Executive Committee
2014–2016	Associate Editor: Directory of Open Access Journals, <a href="http://doaj.org/">http://doaj.org/</a>
2014	Session Moderator: ASEE Annual Conference
2014	Reviewer: International Conference on Transformations in Engineering Education
2014	Reviewer: Soft Robotics, Mary Ann Liebert Inc. Publishers
2012–2013	Reviewer: ASME Dynamic Systems and Control Conference

## Affiliations

Biomedical Engineering Society  
Wisconsin/Nicaragua Partners of the Americas  
Engineers Without Borders USA  
American Society for Engineering Education  
American Society of Mechanical Engineers  
Pi Tau Sigma (Honorary Mechanical Engineering Society)  
Tau Beta Pi (Honorary Engineering Society)

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