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STEVE VOZAR

**Research Fellow in Electrical Engineering and Computer Science and
Naval Architecture and Marine Engineering
University of Michigan, Ann Arbor, MI**

RESEARCH INTERESTS

Robotics; teleoperation; human-robot interaction; latency; user modeling; space teleoperation;
teleoperated mobile manipulation; augmented reality; mechatronics; dynamics; controls.

EDUCATION

University of Michigan Ann Arbor, MI
Ph.D., Mechanical Engineering Aug. 2013
Dissertation: A Framework for Improving Speed and Performance
of Teleoperated Mobile Manipulators

University of Michigan Ann Arbor, MI
M.S.E., Mechanical Engineering Dec. 2009
Thesis: Optical System for the Determination of Flame Retardant Effectiveness

University of Michigan Ann Arbor, MI
B.S.E., Mechanical Engineering, *Summa Cum Laude* (GPA 3.94/4.00) April 2008

EXPERIENCE

University of Michigan (Ann Arbor, MI) April 2015 – Present
Research Fellow, Perceptual Robotics Laboratory

Johns Hopkins University (Baltimore, MD) Jan. 2014 – April 2015
Postdoctoral Fellow, Laboratory for Computational Sensing and Robotics

University of Michigan (Ann Arbor, MI) June 2009 – Dec. 2013
Graduate Student Researcher, Ground Robotics Reliability Center

Absolute Nano, LLC (Plymouth, MI) April 2008 – Dec. 2013
Co-Founder and Partner

Human Interface Technology Laboratory (Christchurch, New Zealand) July 2010 – Aug. 2010
Intern

University of Michigan (Ann Arbor, MI) Aug. 2008 – June 2009
Graduate Student Researcher, Quantitative Laser Diagnostics Lab

Ingenieurgesellschaft Auto und Verkehr, GmbH (Berlin, Germany) May 2008 – Aug. 2008
Engineering Praktikant (Intern)

University of Michigan (Ann Arbor, MI) May 2007 – April 2008
Undergraduate Research Assistant, Mechanical Engineering Department

HandyLab, Inc. (Ann Arbor, MI) July 2007 – Aug. 2007
Engineering Intern

STM Power, Inc. (Ann Arbor, MI)
Engineering and Program Management Intern

Feb. 2006 – Aug. 2006

Case Western Reserve University (Cleveland, OH)
Undergraduate Research Assistant, Physics Department

Oct. 2004 – Dec. 2005

AWARDS

Travel Grant, NATO Advanced Autonomous Vehicle Design for Severe Environments Advanced Study Institute	2014
Travel Grant, NSF Young Professionals' Cyber-Physical Systems Workshop	2014
Best Student Poster, 19th Automotive Research Center Annual Program Review	2013
Travel Grant, Human-Robot Interaction Pioneers Workshop	2012
Distinguished Leadership Award, University of Michigan College of Engineering	2011
R&D100 Award, R&D Magazine (<i>Spin-Grower</i> Automated Layer-by-Layer System)	2009
Travel Bursary Award, International Federation of Automotive Engineering Societies	2008
Weiss-Partin Scholarship, University of Michigan	2008
Class of 1934E Scholarship, University of Michigan College of Engineering	2006–2008
President's Scholarship, Case Western Reserve University	2004–2006
Eagle Scout, Boy Scouts of America	2002

PUBLICATIONS

11. S. Vozar, Z. Chen, L. L. Whitcomb, and P. Kazanzides, "Preliminary study of virtual nonholonomic constraints for time-delayed teleoperation," in *Proc. IEEE/RSJ Int. Conf. Intell. Robots and Syst.*, October 2015, to appear
10. S. Vozar, S. Leonard, L. L. Whitcomb, and P. Kazanzides, "Experimental evaluation of force control for virtual-fixture-assisted teleoperation for on-orbit manipulation of satellite thermal blanket insulation," in *Proc. IEEE Int. Conf. Robot. and Automation*, May 2015, pp. 4424–4431
9. S. Vozar and D. M. Tilbury, "Driver modeling for teleoperation with time delay," in *Proceedings of the 19th IFAC World Congress*, 2014, pp. 3551–3556
8. J. Storms, S. Vozar, and D. Tilbury, "Predicting human performance during teleoperation," in *Proceedings of the 2014 ACM/IEEE international conference on Human-robot Interaction*, pp. 298–299
7. S. Vozar and D. M. Tilbury, "Improving teleoperated robot speed using optimization techniques," in *Proceedings of the 8th ACM/IEEE international conference on Human-robot interaction*. IEEE Press, 2013, pp. 249–250
6. P. Turpel, B. Xia, X. Ge, S. Mo, and S. Vozar, "Balance-arm tablet computer stand for robotic camera control," in *Proceedings of the 8th ACM/IEEE international conference on Human-robot interaction*. IEEE Press, 2013, pp. 241–242
5. S. Vozar and D. M. Tilbury, "Augmented reality user interface for mobile robots with manipulator arms: Development, testing, and qualitative analysis," in *Proceedings of the ASME International Design Engineering Technical Conferences (IDETC) and Computers and Information in Engineering Conference (CIE)*, 2012, DETC2012-70347
4. S. Vozar and D. M. Tilbury, "Improving UGV teleoperation performance using novel visualization techniques and manual interfaces," in *Proceedings of the SPIE, Unmanned Systems Technology XIV*, vol. 8387, 2012, p. 838716

3. S. Vozar and D. M. Tilbury, "Augmented reality user interface for mobile ground robots with manipulator arms," in *Proceedings of the SPIE, Intelligent Robots and Computer Vision XXVIII: Algorithms and Techniques*, vol. 7878, 2011, pp. 78 780M–78 780M–9
2. S. Vozar, Y.-C. Poh, T. Serbowicz, M. Bachner, P. Podsiadlo, M. Qin, E. Verploegen, N. Kotov, and A. J. Hart, "Automated spin-assisted layer-by-layer assembly of nanocomposites," *Review of Scientific Instruments*, vol. 80, no. 2, pp. 023 903–023 903, 2009
1. M. Beach, S. Vozar, S. Filipi, A. Shmakov, V. Shvartsberg, O. Korobeinichev, T. Morgan, T. Hu, and V. Sick, "Screening approaches for gas-phase activity of flame retardants," *Proceedings of the Combustion Institute*, vol. 32, no. 2, pp. 2625–2632, 2009

PRESENTATIONS

7. S. Vozar (speaker), S. Leonard, L. L. Whitcomb, and P. Kazanzides, "Experimental evaluation of force control for virtual-fixture-assisted teleoperation for on-orbit manipulation of satellite thermal blanket insulation." Seattle, Washington, USA: presented at the 2015 International Conference on Robotics and Automation (ICRA), May 2015
6. S. Vozar, "An introduction to human-robot interaction for rescue robotics," presented at the 2014 IEEE Robotics and Automation Society Response Robotics Summer School and Workshop, Curtin University, Perth, Australia, September 2014
5. S. Vozar and D. M. Tilbury (speaker), "Driver modeling for teleoperation with time delay." Cape Town International Convention Centre, South Africa: presented at the 19th IFAC World Congress, August 2014
4. S. Vozar (speaker) and D. M. Tilbury, "Augmented reality user interface for mobile robots with manipulator arms: Development, testing, and qualitative analysis," presented at the 32nd Computers and Information in Engineering Conference (CIE), Hyatt Regency McCormick Place, Chicago, Illinois, USA, August 2012
3. S. Vozar (speaker) and D. M. Tilbury, "Improving UGV teleoperation performance using novel visualization techniques and manual interfaces," presented at Unmanned Systems Technology XIV: Session 9: Articulation and Manipulation, Baltimore Convention Center, Maryland, USA, April 2012
2. S. Vozar (speaker) and D. M. Tilbury, "Augmented reality user interface for mobile ground robots with manipulator arms," presented at Intelligent Robots and Computer Vision XXVIII: Algorithms and Techniques, San Francisco Airport, California, USA, January 2011
1. M. Beach (speaker), S. Vozar, S. Filipi, A. Shmakov, V. Shvartsberg, O. Korobeinichev, T. Morgan, T. Hu, and V. Sick, "Application of combustion science diagnostic techniques to an improved understanding of flame retardant gas-phase activity," presented at the 5th Fire and Polymer Symposium; Spring 2008 ACS National Meeting and Exposition, Hilton New Orleans Riverside, Louisiana, USA, 2008

TEACHING EXPERIENCE

Response Robotics Summer School and Workshop IEEE Robotics and Automation Society
 Practical Session Leader September 2014

Undergraduate Research Opportunity Program University of Michigan
 Research Mentor Fall 2011, Winter 2012, Fall 2012, Winter 2013

Design and Manufacturing III University of Michigan ME450
 Project Sponsor Winter 2011, Winter 2012, Fall 2012

ACADEMIC AND PROFESSIONAL ACTIVITIES

Human-Robot Interaction Pioneers Workshop Publications Chair and Organizing Committee	2012–2013
University of Michigan College of Engineering Curriculum Committee Graduate Student Representative	2010–2013
University of Michigan Mechanical Engineering Planning Committee Student Representative	2010–2013
University of Michigan Mechanical Engineering Graduate Council Corresponding Secretary	2009–2013
University of Michigan Graduate Student Advisory Council Mechanical Engineering Representative	2009–2013
University of Michigan Mechanical Engineering Student Leadership Board Member and Facilitator (2011-2013)	2008–2013
Pi Tau Sigma (PTS) Michigan Pi Rho Chapter Multiple positions, including President (2008–2009) during which Michigan hosted the 2009 PTS National Convention	2006–2013
University of Michigan Mechanical Engineering Graduate Program Committee Student Representative	2010–2011
University of Michigan Engineering Graduate Symposium Technical Session Chair: Power, Control, and Mechatronics	2010
Professional Society Memberships Institute of Electrical and Electronics Engineers Institute of Electrical and Electronics Engineers Robotics and Automation Society Pi Tau Sigma, National Mechanical Engineering Honor Society Tau Beta Pi, National Engineering Honor Society National Center for Science Education Project Steve Signatory	