JACOB G. HUNTER

Herrick Laboratories
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RESEARCH AND TEACHING INTERESTS

Product Development, Design Neurocognition, Engineering Design Theory and Methodology, Engineering Education, Human Automation Interaction, Human AI Teaming

EDUCATION

Purdue University West Lafayette, IN
Ph.D. in Mechanical Engineering Expected May 2025

Purdue University West Lafayette, IN
M.S. in Mechanical Engineering May 2023

Brigham Young University Provo, UT
B.S. in Mechanical Engineering April 2020
Secondary Major in French Studies

PROFESSIONAL EXPERIENCE

Honda Research Institute San Jose, CA
Student Associate Aug. 2021 – Dec. 2021

French National Institute of Health & Medical Research Paris, France
Research & Development Intern May 2019 – June 2019

HONORS AND AWARDS

Professional Grant Recipient, Purdue Graduate Student Government. January 2023
This grant provided funding to attend the 7th Special Interest Group Tutorial on Design Theory in Paris, France.

Top 10 Abstract, ASME Design Theory & Methodology Poster Session August 2022

Three Minute Thesis Finalist, Purdue University April 2022

First Place, ASME Student Mechanisms & Robotics Design Competition August 2020

Elisabeth M. and Winchell M. Parsons Scholarship, ASME September 2020

Weidman Global Scholar, Brigham Young University August 2019 – April 2020

Student Design Essay Winner, Joint NSF & ASME Competition August 2018

3.5 Year Academic Scholarship, Brigham Young University Sept. 2013 – Apr. 2018

PUBLICATIONS

Books, Book Chapters, and Editorials

1. Jain, N., Reid, T., Akash, K., Yuh, M., and Hunter, J.G. (2022). Enabling Human-Aware Autonomy through Cognitive Modeling and Feedback Control. In: Cyber-Physical-Human Systems: Fundamentals and Applications (ed. A. Annaswamy et al.), UK: Wiley, in Press.

Journal Articles

1. Hunter, Jacob G., Ulwelling, E., Konishi, M., Michelini, N., Modali, A., Mendoza, A., ... & Reid, T."The Future of Mobility-as-a-Service: Trust Transfer Across Automated Mobilities, From Road to Sidewalk." *Frontiers in Psychology*, 2023, vol. 14, pp. 17-37, DOI:10.3389/fpsyg.2023.1129583.

Conference Papers

1. S. Mehrotra, J.G. Hunter, M. Konishi, K. Akash, Z. Zheng, T. Misu, A. Kumar, T. Reid, and N. Jain, "Trust in Shared Automated Vehicles: Study on Two Mobility Platforms," 103rd Transportation Research Board Annual Meeting, Washington D.C., January 8–12, 2023, arxiv.org/pdf/2303.09711.pdf.
2. J.G. Hunter, M. Konishi, N. Jain, K. Akash, X. Wu, T. Misu, and T. Reid, "The interaction gap: a step toward understanding trust in autonomous vehicles between encounters," Proceedings of the Human Factors and Ergonomics Society 66th International Annual Meeting, Atlanta, GA, October 10–14, 2022.
3. M. Konishi, J.G. Hunter, Z.K. Zheng, T. Misu, K. Akash, T. Reid, and N. Jain, "Inferring Takeover in SAE Level 2 Automated Vehicles Using Driver-Based Behavioral and Psychophysiological Signals," IFAC-PapersOnLine, 2022, vol. 55, iss. 41, pp. 7-12.
4. K. Ray, B. Cappuccilli, J. Hunter, M. Eichenauer, B.E. Sells, and T. Reid, "Ethical Human Centered Design: Practical Approaches for Aerospace Engineering Education," AIAA Aviation Forum, Chicago, IL, IDETC2019-98419, June 27 – July 1, 2022, DOI:10.2514/6.2022-3711.
5. J.G. Hunter, C.A. Mattson, and S.P. Magleby, "Benefits of a Short-Term Engineering Study Abroad: A Survey of Students Over the Past 15 Years," ASME 2019 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference, St. Anaheim, CA, IDETC2019-98419, August 18–21, 2019.

TALKS AND PRESENTATIONS

Poster Presentation, "Building Trust in Automated Mobilities Through Engineering Design," Design Theory and Methodology Student Poster Session, St. Louis, MO, August 20, 2022.

Three Minute Thesis, "Let's Be Excited for Shared Autonomous Vehicles," Purdue University Campus Competition, West Lafayette, Indiana, April 12, 2022.

Poster Presentation, "The High-Tech, Global Design and Manufacturing Enterprise of 2035," NSF/ASME Student Poster Session, Québec, Canada, August 27, 2018.

TEACHING AND MENTORING

Graduate Student Research Co-Leader, Summer Intensive Research Institute (SIRI), NSF Cyber Physical Systems Grant, Purdue University. Organized and directed the eight-week undergraduate research program (SIRI) in conjunction with the graduate student leadership team. Performed several administrative duties to ensure the undergraduate students had a positive and meaningful experience, West Lafayette, Indiana, May 2023 – July 2023.

Seminary Co-Teacher, Seminaries & Institutes Division, Church Educational System, the Church of Jesus Christ of Latter-Day Saints. Taught both an Old and New Testament course with my wife to high school students 5 days/week before school (50-minute lessons), West Lafayette, Indiana, August 2022 – May 2023.

Workshop Brainstorm Leader, Summit on Trusted Autonomy Research & Technology (START), hosted by the Purdue Center for Innovation in Control, Optimization and Networks (ICON). Facilitated multiple rounds of brainstorming with a group of industry professionals, academics, and government contractors on enabling trusted autonomous systems, West Lafayette, Indiana, June 28-29, 2022.

Graduate Student Research Mentor, Summer Intensive Research Institute (SIRI), NSF Cyber Physical Systems Grant, Purdue University. Mentored two undergraduate students in the area of human-automation teaming; assisted them through the research process from problem definition through data collection and analysis, originally planned for West Lafayette, Indiana, but completed virtually due to COVID-19, June 2021 – July 2021.

Team Lead, Brigham Young University Capstone, Project for Deseret International Charities. Directed a multidisciplinary team of six engineering students through two stages of product development; designed a modular, insulated flooring system for Mongolian yurts, Provo, Utah, September 2019 – December 2019.

Teaching Assistant, Civil Engineering Department, Brigham Young University. Taught and mentored students in the area of dynamics, Provo, Utah, May 2017 – April 2018.

Grader, Mechanical Engineering Department, Brigham Young University. Graded for the ME 101 Statics Class, Provo, Utah, May 2017 – June 2017.

PATENTS

1. "Integrated Cleaning Device and System for Optical Instruments," Sheffield, J.L., Lytle, A., Hunter, J.G., Hyatt, L., and Howell, L.L., Patent-Pending.

PROFESSIONAL ACTIVITIES

Professional Affiliations

Member, The Design Society, January 2023 - Present.

Member, American Society of Mechanical Engineering (ASME), 2018 - Present.

SERVICE

Committee Representative, the City of West Lafayette Mobility Safety Committee, May 2023 – Present.

President, Official Mechanical Engineering Graduate Association (OMEGA), Purdue University, May 2023 – Present.

Vice President, Official Mechanical Engineering Graduate Association (OMEGA), Purdue University, May 2022 – April 2023.

Student Chair, American Society of Mechanical Engineers, Brigham Young University Chapter, September 2019 – April 2020.

Associate Editor, The BYU Design Review, July 2019 – June 2020.

Full-time Missionary, The Church of Jesus Christ of Latter-day Saints, Canada Montréal Mission. Served as Trainer (3x) and Zone Leader (2x), May 2014 – April 2016.

Math Tutor, Wasatch Elementary School, Provo, Utah, September 2013 – December 2013.

INTERNATIONAL EXPERIENCE

Participant, 16th SIG Workshop on Design Theory and 7th SIG Tutorial on Design Theory, Paris, France, January – February 2023

Team lead and member, Brigham Young University Capstone, Sponsored by Deseret International Charities, travel to implement prototype in Ulaanbaatar, Mongolia planned, but ultimately cancelled due to COVID-19, March 2020

Intern, French National Institute of Health & Medical Research (INSERM), Paris, France, May – June 2019

Study Abroad Student, Global Product Development (Me En 579), USA, Panama, Brazil, Chile, and Argentina, April – May 2018

Full-time Missionary, the Church of Jesus Christ of Latter-day Saints, lived among and served people in the province of Québec, Canada, May 2014 – April 2016