

Shannon C. Roberts

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Education

Ph.D.	2014	University of Wisconsin-Madison, Madison, WI Major: Industrial Engineering Minor: Psychology Dissertation: Engaging teenage social networks to enhance driving safety
M.S.	2011	University of Wisconsin-Madison, Madison, WI Major: Industrial Engineering Project: Measurement and mitigation of driver distraction
B.S.	2009	Massachusetts Institute of Technology, Cambridge, MA Major: Mechanical Engineering Thesis: City Browser: A user study to optimize a naturalistic voice navigation system

Professional Appointments

2016 -	Assistant Professor, Mechanical and Industrial Engineering Department, University of Massachusetts-Amherst, Amherst, MA Co-Director of the Human Performance Laboratory, Mechanical and Industrial Engineering Department, University of Massachusetts-Amherst, Amherst, MA
2014 – 2016	Technical Staff, Cyber Analytics and Decision Systems Group, Massachusetts Institute of Technology Lincoln Laboratory, Lexington, MA
2009 – 2014	Graduate Research Assistant, Cognitive Systems Laboratory in Industrial and Systems Engineering Department, University of Wisconsin- Madison, Madison, WI
2006 – 2009	Undergraduate Research Assistant, MIT Agelab, Massachusetts Institute of Technology, Cambridge, MA

Awards and Recognition

Fellow and Scholar Appointments

2021 – 2022	Lilly Teaching Fellow, University of Massachusetts Amherst
2021 – 2022	ADVANCE Faculty Fellow, University of Massachusetts Amherst
2018 – 2019	Center for Research on Families Scholar, University of Massachusetts Amherst
2013 – 2014	Dwight David Eisenhower Transportation Fellow, U.S. Department of Transportation
2013 – 2014	Graduate Engineering Research Scholar, University of Wisconsin Madison
Summer 2012	National Science Foundation Engineering Innovation Fellow, Hewlett-Packard Labs
Summer 2011	American Society of Safety Engineers Fellow, Liberty Mutual Research Institute for Safety
2010 – 2013	Graduate Research Fellow, National Science Foundation
2009 – 2010	Graduate Engineering Research Scholar, University of Wisconsin Madison

Awards

2019	Stephanie Binder Young Professional Award, Human Factors and Ergonomics Society – Surface Transportation Technical Group
2019	Best Poster Award, Hybrid Session on “Intriguing Research About the Performance of Transportation Users”, Transportation Research Board 98 th Annual Meeting
2018	Industrial Engineering Professor of the Year (Student Voted), University of Massachusetts Amherst
2012	2 nd place in Intel Outstanding Student Paper Award, 4 th International Conference on Automotive User Interfaces and Interactive Vehicular Applications
2012	Student Member with Honors, Human Factors and Ergonomics Society

Publications and Presentations

* denotes student author/co-author advised by me; + denotes presenter

Peer-reviewed Book Chapter

1. **Roberts, S. C.**, Smith-Doerr, L., Zilberstein, S., Renski, H., Branch, E. H., & Wilkerson, T. (2019). Automation, work, and racial equity: How human systems engineering can shape the future of work. In R. D. Roscoe, E. K. Chiou, & A. R. Wooldridge (Eds.), *Advancing Diversity, Inclusion, and Social Justice through Human Systems Engineering* (pp. 191-214). Boca Raton, FL: CRC Press. (Edited volume received award for Outstanding Academic Title from Choice Organization)

Peer-reviewed Journal Articles (Total: 12)

1. Mehrotra, S. *, Zhang, F. *, & **Roberts, S. C.** (in press). Looking out or looking away? Exploring the impact of driving with a passenger on young drivers' eye glance behavior. *Human Factors: The Journal of the Human Factors and Ergonomics Society*. (Impact Factor: 2.888)
2. Parathasarathy, A. R., Mehrotra, S. *, Fitzpatrick, C., **Roberts, S. C.**, Christofa, E., & Knodler, M. A. (2021). Driver behavior and performances on in-vehicle display based speed compliance. *Accident Analysis and Prevention*, 162. (Impact Factor: 4.993)
3. **Roberts, S. C.**, Zhang, F. *, Fisher, D., & Vaca, F. E. (2021). The effect of hazard awareness training on teen drivers of varying socioeconomic status. *Traffic Injury Prevention*, 22(6), 455-459. (Impact Factor: 1.38)
4. Ebadi, Y. *, Helm, A., Hungund, A. *, **Roberts, S. C.**, McDermott, J. M., Epstein, J., & Fisher, D. L. (2021). Impact of L2 Automated Systems on Hazard Anticipation and Mitigation Behavior of Young Drivers with Varying Levels of Attention Deficit Hyperactivity Disorder Symptomatology. *Accident Analysis and Prevention*, 159 (106292). (Impact Factor: 4.993)
5. Fournier, N., Bakhtiari, S., Valluru, K. D., Campbell, N., **Roberts, S. C.**, Christofa E., & Knodler, M. A. (2020). Accounting for bicycling frequency and familiarity with bicycle infrastructure treatments when evaluating safety. *Accident Analysis & Prevention*, 137(105410). (Impact Factor: 4.993)
6. Renski, H. C., Smith-Doerr, L., Wilkerson, T., **Roberts, S. C.**, Zilberstein, S., & Branch, E. H. (2020). Racial Equity and the Future of Work. *Technology | Architecture + Design*, 4(1), 17-22.
7. Zhang, F. *, Mehrotra, S. *, **Roberts, S. C.** (2019). Driving distracted with friends: Effect of passengers and driver distraction on young drivers' behavior. *Accident Analysis & Prevention*, 132(105246). (Impact Factor: 4.993)
8. Ebadi, Y. * +, Fisher, D., & **Roberts, S. C.** (2019). Impact of cognitive distractions on drivers' hazard anticipation behavior in complex scenarios. *Transportation Research Record*, 2673 (9), 440-451. (Impact Factor: 1.56)
9. Lee, J., **Roberts, S. C.**, Reimer, B., & Mehler, B. (2017). Does order matter? Investigating the effect of sequence on glance duration during on-road driving. *PLOS ONE*, 12(2). (Impact Factor: 3.24)
10. **Roberts, S. C.**, Horrey, W. J., & Liang, Y. (2016). Measurement of driver calibration and the impact of feedback on drivers' estimates of performance. *Accident Analysis & Prevention*, 88, 150-158. (Impact Factor: 4.993)

11. **Roberts, S. C.**, Ghazizadeh, M., & Lee, J. D. (2012). Warn me now or inform me later: Drivers' acceptance of real-time and post-drive mitigation systems. *International Journal of Human-Computer Studies*, 70(12), 967-979. (Impact Factor: 3.632)
12. Lee, J. D., **Roberts, S. C.**, Hoffman, J. D., & Angell, L. S. (2012). Scrolling and driving: How an MP3 player and its aftermarket controller affect driving performance and visual behavior. *Human Factors: The Journal of the Human Factors and Ergonomics Society*, 54(2), 250-263. (Impact Factor: 2.888)

Peer-reviewed Conference Proceedings (Total: 21)

1. **Roberts, S. C.**, Ebadi, Y. *, Talreja, N. *, Knodler, M. K., & Fisher, D. F. (submitted). Designing and Evaluating an Informative Interface for Transfer of Control in a Level 2 Automated Driving System. 14th International Conference on Automotive User Interfaces and Interactive Vehicular Applications, Seoul, South Korea.
2. **Roberts, S. C.**, Ebadi, Y. *, Father, P. *, Knodler, M. K., & Fisher, D. F. (submitted). Design and Evaluation of a PC-based training program for Transfer of Control Situations in a Level 2 Automated Driving System. 14th International Conference on Automotive User Interfaces and Interactive Vehicular Applications, Seoul, South Korea.
3. Parker, J. *, Zhang, F. *, Wang, M. *, & **Roberts, S. C.** (submitted). How do drivers respond to vehicle cyberattacks? A driving simulator study. *Human Factors and Ergonomics Society Annual Meeting Proceedings*
4. Mehrotra, S. * & **Roberts, S. C.** (submitted). Identifying and Improving Young Drivers' Perceptions towards Vulnerable Road Users. *Human Factors and Ergonomics Society Annual Meeting Proceedings*.
5. Gonzales, E., **Roberts, S. C.**, & Mehrotra, S. * (2022). Curb Management Policy Insights and Recommendations for Communities of All Sizes. In *Proceedings of the Transportation Research Board 101st Annual Meeting 2022*.
6. Saisubramanian, S. +, **Roberts, S. C.**, & Zilberstein, S. (2021). Understanding User Attitudes Towards Negative Side Effects of AI Systems. In *Extended Abstracts of the 2021 CHI Conference on Human Factors in Computing Systems* (pp. 1-6).
7. Wooldridge, A. R. +, Roscoe, R. D. +, **Roberts, S. C.** +, Valdez, R. S. + (2020). Designing for Diversity: Implications for Research and Practice. *Human Factors and Ergonomics Society Annual Meeting Proceedings*, 64, 563-567.
8. Zhang, F. * +, Russo, L., Landry, S., Sharma, P. *, **Roberts, S. C.**, Seppelt, B., & Reimer, B. (2020). Perceptions of automated driver assistance systems (ADAS): Using text mining to uncover insights from drivers with real-world ADAS experience. In *Proceedings of the Transportation Research Board 99th Annual Meeting 2020*.
9. Zhang, F. * +, Petit, J., & **Roberts, S. C.** (2019). A Simulator Study on Drivers' Response and Perception Towards Vehicle Cyberattacks. *Human Factors and Ergonomics Society Annual Meeting Proceedings*, 63, 1498–1502.
10. Qin, L. +, Lapets, A., Jansen, F., Flockhart, P., Albab, K. D., Globus-Harris, I., **Roberts, S. C.**, & Varia, M. (2019). From usability to secure computing and back again. In *Proceedings of the 15th Symposium on Usable Privacy and Security (SOUPS)* (pp. 191-210). Santa Clara, CA: Usenix Association.
11. Zhang, F. * +, **Roberts, S. C.**, & Goldman, C. (2019). A survey study measuring

- people's preferences towards automated and non-automated ridesplitting. *10th International Driving Symposium*, 10, 92-98.
12. Zhang, F. ^{*,†}, Mehrotra, S. ^{*}, & **Roberts, S. C.** (2018). Examining the effect of social influence on young drivers' behavior. *Human Factors and Ergonomics Society Annual Meeting Proceedings*, 62, 1394-1398.
 13. Mehrotra, S. ^{*,†}, Zhang, F. ^{*}, & **Roberts, S. C.** (2018). Evaluation and validation of distraction detection algorithms on multiple data sources. *Human Factors and Ergonomics Society Annual Meeting Proceedings*, 62, 1949-1953.
 14. Mehrotra, S. ^{*,†}, & **Roberts, S. C.** (2018). Identification and validation of themes from vehicle owner complaints and fatality reports using text analysis. In *Proceedings of the Transportation Research Board 97th Annual Meeting 2018*. Washington D.C.: The National Academies of Sciences, Engineering, and Medicine.
 15. **Roberts, S. C.** [†], Holodnak, J. T. [†], Nguyen, T., Yuditskaya, S., Milosavljevic, M., & Streilein, W. W. (2016). Model-based approach to predicting performance of insider threat detection systems. In *2016 IEEE Security and Privacy Workshops (SPW)* (pp. 314–323). San Jose, CA: IEEE.
 16. **Roberts, S. C.** [†], & Lee, J. D. (2014). Deciphering 140 characters: Text mining tweets on #DriverDistraction. *Human Factors and Ergonomics Society Annual Meeting Proceedings*, 58, 2195-2199.
 17. **Roberts, S. C.** [†], & Lee, J. D. (2012). Using agent-based modeling to predict the diffusion of safe teenage driving behavior through an online social network. *Human Factors and Ergonomics Society Annual Meeting Proceedings*, 56, 2271-2275.
 18. **Roberts, S. C.**, Horrey, W. J. [†], & Liang, Y. (2012). *Effect of performance feedback (or lack thereof) on driver calibration*. Paper presented at the Proceedings of the 4th International Conference on Automotive User Interfaces and Interactive Vehicular Applications, Portsmouth, New Hampshire. (Received 2nd place in Intel Outstanding Student Paper Award)
 19. **Roberts, S. C.** [†], Mehler, B., Orszulak, J., Reimer, B., Glass, J., & Coughlin, J. (2011). An evaluation of age, gender, and technology experience in user performance and impressions of a multimodal human-machine interface. In T. Doolen & E. Van Aken (Eds.), *Proceedings of the 2011 Industrial Engineering Research Conference*. Reno, NV.
 20. **Roberts, S. C.** [†], Lee, J. D., & Hoffman, J. D. (2010). Using capacity analysis to evaluate the effect of MP3 player usage on driver behavior. *Human Factors and Ergonomics Society Annual Meeting Proceedings*, 54(24), 2120-2124.
 21. Gruenstein, A. [†], Orszulak, J., Liu, S., **Roberts, S. C.** [†], Zabel, J., Reimer, B., et al. (2009). City Browser: Developing a conversational HMI. In *Proceedings of the 27th international conference extended abstracts on Human factors in computing systems* (pp. 4291-4296). Boston, MA: ACM Press.

Teaching

indicates new course I developed

MIE: Mechanical and Industrial Engineering Department; CEE: Civil and Environmental Engineering Department

Graduate Teaching

Human Factors Design Engineering, MIE 657, 20 students: Focuses on the design of engineering systems, machines, and consumer goods that accommodate the

characteristics of human users, operators, and maintainers. The course covers methods for obtaining data about human performance, preferences, tolerances, and group behavior for engineering design problems. Students gain experience in Human Factors through comprehensive readings, case study projects, a literature review, and a human subjects experiment. (Taught in person Fall 2016, 2017, 2018, 2022, and online 2020)

#Research Methods for Engineers, MIE 697RM, 10 students: Familiarizes graduate students with necessary skills to conduct engineering research, including its design, methods, and analyses. It covers the following topics: identifying and selecting research questions, objectives, and hypotheses; conducting a literature review; selecting the appropriate research methods; analyzing the results using statistics in the R statistical environment; and writing a research plan or report. Students also learn the ethics of conducting engineering research. (Taught in person Fall 2019 and 2021)

Undergraduate Teaching

Statistical Quality Control, MIE 422, 40 students: Uses concepts, techniques, and procedures from probability and statistics to determine the risks of making decisions regarding the control and the acceptance of their outputs, and the design and improvement of their processes and products. Topics covered include: probability, basic statistics, and hypothesis testing; control charts for discrete and continuous random experiments; acceptance sampling plans; reliability; and experimental design. (Taught in person Spring 2017, 2018, 2019, and Fall 2022)

Probability and Statistics for Engineering, MIE 273/CEE 260, 150 students: Introduces probability theory and basic statistics and demonstrates its importance and utility in engineering applications. Details discrete and continuous probability models and their use in the analysis of experimental data, quality control, manufacturing processes, and Monte Carlo simulations along with basic regression analysis and statistical procedures for estimation. (Taught online Spring 2021, Summer 2021, and Summer 2022 and in person Spring 2022)

Student Mentoring

[<] denotes female student; [>] denotes underrepresented minority student

Ph.D. Advising (Total: 5)

1. ^{<>} Grace Babalola, Doctor of Philosophy in Industrial Engineering, Expected Graduation: May 2025
2. [<] Meng Wang, Doctor of Philosophy in Industrial Engineering, Expected Graduation: May 2025
3. Shashank Mehrotra, Doctor of Philosophy in Industrial Engineering, Graduation: December 2021
4. Fangda Zhang, Doctor of Philosophy in Industrial Engineering, Graduation: August 2021
5. [<]Yalda Ebadi, Doctor of Philosophy in Industrial Engineering, Graduation: August 2020 (*co-advised with Donald Fisher*)

Ph.D. Committee Member (Total: 6)

1. <Kaleigh Clary, Doctor of Philosophy in Computer Science, Expected Graduation: September 2022
2. Connor Basich, Doctor of Philosophy in Computer Science, Expected Graduation: September 2022
3. <Aikaterini Deliali, Doctor of Philosophy in Civil Engineering, Graduation: December 2021
4. <Sandhya Saisubramanian, Doctor of Philosophy in Computer Science, Graduation: December 2021
5. <Abigail Helm, Doctor of Philosophy in Psychological and Brain Sciences, Graduation: December 2020
6. <Kimberly Ferguson Walter, Doctor of Philosophy in Computer Science, Graduation: May 2020

M.S. Advising

1. Shashank Mehrotra, Master of Science in Industrial Engineering, Graduation: August 2018

M.S. Committee Member (Total: 7)

1. Peter Frackleton, Master of Science in Industrial Engineering, Graduation: August 2021
2. Ganesh Pai Mangalore, Master of Science in Industrial Engineering, Graduation: August 2019
3. <Buyannemekh Munkhbat, Master of Science in Industrial Engineering, Graduation: May 2019
4. Rajiv Nair, Master of Science in Industrial Engineering, Graduation: May 2019
5. Krishna Vallura, Master of Science in Industrial Engineering, Graduation: August 2018
6. <Claire Cruickshank, Master of Science in Industrial Engineering, Graduation: May 2018
7. <> Vanessa Martinez, Master of Science in Industrial Engineering, Graduation: May 2018

M.S. Independent Study (Total: 3)

1. Timothy Costa, Master of Science in Mechanical Engineering, Graduation: May 2019
2. <Priya Sharma, Master of Science in Engineering Management, Graduation: May 2019
3. Jackie Zheng, Master of Science in Engineering Management, Graduation: May 2019

B.S. Independent Study/Paid Research Positions (Total: 17)

1. >Anthony Samuel, Bachelor of Science in Mechanical Engineering, Expected Graduation: May 2023
2. >Didier Kasole, Bachelor of Science in Industrial Engineering, Expected Graduation: May 2023

3. Aditya Surbhit, Bachelor of Science in Computer Science, Expected Graduation: May 2023
4. <Phoebe Father, Bachelor of Science in Industrial Engineering, Graduation: May 2022
5. Nicholas Wong, Bachelor of Science in Industrial Engineering, Graduation: May 2022
6. <> Beatrice Ojuri, Bachelor of Science in Psychology, Graduation: May 2022 (also an REU Student)
7. <> Jah'inaya Parker, Bachelor of Science in Industrial Engineering, Graduation: May 2022 (also an REU Student)
8. <Aliecia Bottali, Bachelor of Science in Industrial Engineering, Graduation: May 2021 (also an REU Student)
9. >Kieto Mahaniah, Bachelor of Science in Industrial Engineering and Operations & Information Management, Graduation: May 2021
10. Mohammad Sanusi, Bachelor of Science in Chemical Engineering, Graduation: May 2020
11. <Yifei Zhu, Bachelor of Science in Industrial Engineering and Mathematics, Graduation: May 2020
12. >Ian Andinda, Bachelor of Science in Mechanical Engineering, Graduation: May 2020
13. <Luiza Masson-Pelucio, Bachelor of Science in Mechanical Engineering, Graduation: May 2019
14. Michael Powers, Bachelor of Science in Industrial Engineering, Graduation: May 2018
15. Tyler Bank, Bachelor of Science in Industrial Engineering, Graduation: May 2018
16. Matthew Fitzmeyer, Bachelor of Science in Mechanical Engineering, Graduation: December 2017
17. <Rose Kelly, Bachelor of Science in Industrial Engineering, Graduation: May 2017

Summer Research Experience for Undergraduates (REU) (Total: 8)

1. <Helen Tang, Bachelor of Science in Industrial Engineering, Expected Graduation: May 2024
2. <Nandni Talreja, Bachelor of Science in Computer Engineering, Expected Graduation: May 2023
3. <> Jah'inaya Parker, Bachelor of Science in Industrial Engineering, Graduation: May 2022 (also a B.S. Independent Study Student)
4. <> Beatrice Ojuri, Bachelor of Science in Psychology, Graduation: May 2022 (also a B.S. Independent Study Student)
5. Alexander Partridge, Bachelor of Science in Civil Engineering (University of Virginia), Graduation: May 2022
6. <Aliecia Bottali, Bachelor of Science in Industrial Engineering, Graduation: May 2021 (also a B.S. Independent Study Student)
7. <> Sakaiza Rasolofomanana-Rajery, Bachelor of Science in Statistical and Data Sciences (Smith College), Graduation: May 2021
8. <Crystal Lee, Bachelor of Science in Industrial Engineering, Graduation: May 2019

Synergistic Activities, Professional Service, & Outreach

Professional Society Memberships and Committees

Human Factors and Ergonomics Society (HFES)

2018 – 2020	Program Chair for Surface Transportation Technical Group
2017 – Present	Member of Committee for Alphonse Chapanis Best Student Paper Award
2011 – 2013	Student Volunteer Co-Chair for HFES Annual Meeting
2010 – Present	Member of Surface Transportation Technical Group

Transportation Research Board (TRB)

2019 – Present	Member of Committee on Human Factors of Vehicles (ACH30)
2016 – Present	Member of Committee on Road User Measurement and Evaluation (ACH50)

International Service

2017	Reviewer for Israel Ministry of Science, Technology, and Space
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National Service

2021	Panel Member/Reviewer for National Institutes of Health (Ad-hoc member of HCMF Study Section)
2019 – Present	Conference Session Chair for TRB Annual Meeting
2018 – 2022	Panel Member for Behavioral Traffic Safety Cooperative Research Program BTS-01
2017 – Present	Panel Member/ Reviewer for National Science Foundation (CISE Directorate)
2017 – Present	Conference Session Chair for HFES Annual Meeting

University of Massachusetts-Amherst Service

2021 – Present	Internal Advisory Board for Institute for Diversity Sciences
2021 – Present	Coordinator for Black STEM Faculty Group
2020 – Present	Steering Committee for Center for Research on Families

College of Engineering

2021 – Present	Faculty Advisor for University of Massachusetts-Amherst Student Chapter of National Society of Black Engineers
2019	Girl's Inc. Eureka Program (STEM summer camp for middle and high school female students)
2019	Science and Engineering Saturday Seminars (STEM workshops for middle and high school teachers)
2018 – 2019	Search Committee for New Dean of Engineering
2017 – Present	Summer Engineering Institute (Engineering summer camp for high school students)

Mechanical and Industrial Engineering Department

2020 – Present	Co-chair of Diversity, Equity, and Inclusion Committee
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2019 – 2020	M.S. Certificate and Programs Committee
2018 – 2019	Search Committee for New Faculty in Robotics
2017 – 2020	Faculty Advisor for University of Massachusetts-Amherst Student Chapter of HFES
2017 – 2018	Departmental Personnel Committee
2017 – 2018	Search Committee for New Faculty in Human Factors
2016 – Present	New Student Orientation Committee
2016 – 2017	Graduate Program Committee
2016 – 2017	New Faculty Package Committee

Community Service

2010 – Present	Educational Counselor for Massachusetts Institute of Technology Office of Admissions
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Journal Editorial Board

Ergonomics

Journal Ad-hoc Reviewer

Applied Ergonomics
Applied Sciences
Ergonomics in Design
Human Factors: The Journal of the Human Factors and Ergonomics Society
IEEE Transactions on Human-Machine Systems
International Journal of Industrial Ergonomics
Journal of Research on Adolescence

Conference Reviewer

Automotive User Interfaces and Interactive Vehicular Applications Conference
HFES Annual Meeting
TRB Annual Meeting

CV last updated: May 2022