Mahrukh Tauseef

2106 Fairfax Avenue, Nashville, TN 37212
Phone: 541-930-4838
Email: mahrukh.tauseef@vanderbilt.edu
LinkedIn: https://www.linkedin.com/in/mahrukh-tauseef/

EDUCATION

VANDERBILT UNIVERSITY — **Nashville, TN**

Doctor of Philosophy in Electrical and Computer Engineering, December 2025
Master of Science in Electrical and Computer Engineering, August 2024 (Overall GPA: 3.87)
Concentration: Augmented and Virtual Reality, Human-Computer Interaction, Machine Learning

- Took initiative in leading 4 federally and internally funded research projects in my PhD program.
- Gained hands-on experience in technology commercialization through the university's incubator program.

New York University Abu Dhabi — **Abu Dhabi, UAE**

Bachelor of Science, May 2020
Major: Electrical Engineering

- Overall GPA: 3.60
- Two years of research experience in the Applied Interactive Multimedia (AIM) Lab, focusing on human-computer interaction and haptic technology.

EXPERIENCE

Robotics and Autonomous Systems Lab — **Nashville, TN**

2021 - Present — *Graduate Research Assistant*

- Developed an Augmented Reality (AR) telepresence system to allow two or more geographically separated users to interact with each other. Developed collaborative activities like checkers and card games in Augmented Reality. Allowed for real-time audio, body, and facial data communication over a network with a latency of less than 30 ms.
- Leading an NIH-funded project under the supervision of my PhD advisor to test the feasibility of an AR telepresence system as compared to Zoom for connecting older adults with their family members. Co-designed and conducted three studies with **53 older adults** in total.
- Led an internally funded project under the supervision of my PhD advisor to test the acceptability of Augmented Reality for two-person and four-person collaboration between autistic individuals. Co-designed and completed the study with **8 autistic individuals**.
- Conceptualized the design of an LLM-based AI assistant for dementia care. Went through two incubator programs to test the product's potential for commercialization. Procured **$15,000** for customer discovery and the development of the prototype.
- Co-designed a collaborative virtual environment for AI-supported soft skills training for autistic individuals funded by Microsoft and the National Science Foundation. Developed a LEGO-based assessment task to quantitatively measure the degree of collaboration using multimodal data. Conducted three studies with **54 individuals (30 autistic)** on system co-creation, feasibility, and acceptance.
- Supported commercialization of an AR-based simulation system to support nursing education as a technical lead. Conducted over **100 customer discovery interviews** and conceptualized the design of the minimal viable product (MVP).
- Used machine learning techniques for emotion detection from physiological data and facial expressions.

2024 - Present — *Research Coordinator*

- Fostered collaboration between the lab and six long-term care facilities for the recruitment of participants.
- Conducted demonstrations of AR telepresence at two community events attended by over 200 older adults.
- Authored 5 approved applications to Vanderbilt University's internal review board for human subject research. Submitted 3 grant reports to the National Science Foundation and the National Institute of Health.

SKILLS

- Augmented Reality – Human-Computer Interaction – Collaborative Systems – Affective Computing – Python – C# – Unity Engine – Unreal Engine – Foundations of Machine Learning – Knowledge Graphs – Generative AI – Optimization – Behavior Analysis – Entrepreneurial Skills

GRANTS

- Received the NSF I-Corp Grant for $50,000 to support customer discovery for AR-based nursing simulation.
- Awarded the LIVE Spark Grant worth $10,000 for MVP development of the AI assistant for dementia care.
- Received two Sullivan Family Ideator microgrants and one Wond'ry's Builder Microgrant worth $7500 to support customer discovery and MVP development of AR-based nursing simulation and AI assistant for dementia care.

PUBLICATIONS

- **Tauseef, M.**, et al. (2024). From Lab to a Long-Term Care Facility: Lessons Learned from Field Deployment of Augmented Reality Telepresence System as an Interactive Communication Technology. *IEEE International Symposium on Mixed and Augmented Reality Adjunct (ISMAR-Adjunct)*.
- Khan, N., **Tauseef, M.**, et al. (2024). A Novel Loss Function Utilizing Wasserstein Distance to Reduce Subject-Dependent Noise for Generalizable Models in Affective Computing. *International Conference on Human-Computer Interaction*. Cham: Springer Nature Switzerland
- Ullal, A., **Tauseef, M**., et al. (2024). An Iterative Participatory Design Approach to Develop Collaborative Augmented Reality Activities for Older Adults in Long-Term Care Facilities. *Proceedings of the CHI Conference on Human Factors in Computing Systems*
- Maxwell, C., **Tauseef, M.**, et al. (2023). Designing Collaborative Augmented Reality Activities with Older Adults in Long-Term Care. *Innovation in Aging* 7. Suppl 1: 1017.
- Plunk, A., Amat, A. Z., **Tauseef, M**., et al. (2023). Semi-supervised behavior labeling using multimodal data during virtual teamwork-based collaborative activities. *Sensors* 23.7: 3524.
- Amat, A. Z., Adiani, D., **Tauseef, M**., et al. (2023). Design of a desktop virtual reality-based collaborative activities simulator (ViRCAS) to support teamwork in workplace settings for autistic adults. *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, *31*, 2184-2194.
- Adiani, D., Breen, M., Migovich, M., Wade, J., Hunt, S., **Tauseef, M**., et al. (2024). Multimodal job interview simulator for training of autistic individuals. *Assistive Technology* 36, no. 1: 22-39.
- **Tauseef, M**., et al. (2022). Design of a Virtual Task to Understand the Nature of Collaboration Between Autistic and Neurotypical Adults in the Workplace Using Multimodal Data. *International Conference on Human-Computer Interaction* (pp. 410-426). Cham: Springer International Publishing.
- Iiyoshi, K., **Tauseef, M**., et al. (2019). Towards standardization of haptic handshake for tactile internet: a WebRTC-based implementation. *IEEE International Symposium on Haptic, Audio and Visual Environments and Games (HAVE)*.