Lauren E. Buck Curriculum Vitae

Computer Science Ph.D. Candidate, May 2021
Electrical Engineering and Computer Science
Vanderbilt University
Nashville TN, USA
lauren.e.buck.1@vanderbilt.edu
Google Scholar: https://scholar.google.com/citations?user=gmTgvjcAAAAJ&hl=en
Personal Website: https://lbuck92.github.io/

Professional Interests

My research pertains to understanding how augmented, mixed and virtual reality technologies mediate interaction and collaboration. These technologies provide novel methods for interaction and communication that can be used for a multitude of purposes, and I am interested in looking at these problems through the lens of interdisciplinary study. I have leveraged cognitive psychology and neuroscience in my work to understand perception and action in virtual environments, and I am interested in extracting perceptual information to create more robust experiences within this technology.

Education

Vanderbilt University, Dept. of Electrical Engineering and Computer Science, Nashville, TN
Doctor of Philosophy in Computer Science, May 2021
Dissertation: *Understanding Virtual Interaction Space: How Interpersonal and Peripersonal Space Modulates in Immersive Virtual Environments*
Advisor: Professor Robert Bodenheimer

Vanderbilt University, Dept. of Electrical Engineering and Computer Science, Nashville, TN
Master of Science in Computer Science, September 2020
Advisor: Professor Robert Bodenheimer

Samford University, Dept. of Mathematics and Computer Science, Birmingham, AL
Bachelor of Science in Computer Science, Minor in Art

Professional Experience

Vanderbilt University, Dept. of Electrical Engineering and Computer Science, Nashville, TN
Graduate Research Assistant, Learning in Virtual Environments Lab, 2018-Present
Graduate Research Assistant, Collaboration with Park Clinical Neuroscience Lab, 2017-Present
Graduate Teaching Assistant, 2015-2017

Birmingham Museum of Art, Birmingham, AL
Database and Development Intern, May-August 2014

Honors and Awards

2020	Best Paper Award, Symposium on Applied Perception (C2)
2018	Best Poster Award, Symposium on Applied Perception (P2)
2018	Computing Research Association Women Grad Cohort Workshop Invitation
2018	Grow with Google Scholarship Challenge
2016	Grace Hopper Celebration of Women in Computing Scholarship Grant

Honorary Societies

Member of Eta Sigma Phi

Membership in Professional Societies

Association of Computing Machinery (ACM and ACM-W North America)
Institute for Electrical and Electronics Engineers (IEEE)

Publications

Refereed Journal Articles

J3. H. Lee, S. Hong, T. Baxter, J. Scott, S. Shenoy, L. Buck, B. Bodenheimer, and S. Park, "Altered Peripersonal Space and the Bodily Self in Schizophrenia; A Virtual Reality Study," *Schizophrenia Bulletin,* Under Review.

J2. L. Buck, J. Rieser, G. Narasimham, and B. Bodenheimer, "Interpersonal Affordances and Social Dynamics in Collaborative Immersive Virtual Environments: Passing Together Through Apertures," *IEEE Transactions on Visualization and Computer Graphics,* **25**(5), pp. 2123-2133, May 2019.

J1. L. Buck, M. K. Young, B. Bodenheimer, "A Comparison of Distance Estimation in HMD-based Virtual Environments with Different HMD-based Conditions," *ACM Transactions on Applied Perception,* **15**(3), Article 21, 16 pages, July 2018.

Highly Selective Conference Publications

(Acceptance based on peer review of full paper and acceptance rate ≤ 40%)

CF2. L. Buck, T. McNamara, and B. Bodenheimer, "Dyadic Acquisition of Survey Knowledge in a Shared Virtual Environment," *IEEE Conference on Virtual Reality and 3D User Interfaces (VR),* pp. 579-587, IEEE, May 2020.

CF1. L. Buck, S. Park, and B. Bodenheimer, "Determining Peripersonal Space Boundaries and Their Plasticity in Relation to Object and Agent Characteristics in an Immersive Virtual Environment," *IEEE Conference on Virtual Reality and 3D User Interfaces (VR),* pp. 529-530, IEEE, May 2020.

Conference Proceedings with Acceptance Based on Peer Review of Full Paper

C2. H. Gagnon, L. Buck, T. Smith, G. Narasimham, J. Stefanucci, S. Creem-Regehr, and B. Bodenheimer, "Far Distance Estimation in Mixed Reality," *ACM Symposium on Applied Perception*, ACM, New York, NY, USA, Article 9, 8 pages, September 2020.

C1. R. Paris, J. Klag, P. Rajan, L. Buck, T. McNamara, and B. Bodenheimer, "How Video Game Locomotion Methods Affect Navigation in Virtual Environments," *ACM Symposium on Applied Perception,* ACM, New York, NY, USA, Article 12, 7 pages, September 2019.

Conference Proceedings with Acceptance Based on an Extended Abstract

CE2. L. Buck and B. Bodenheimer, "Privacy and Personal Space: Addressing Interactions and Interaction Data as a Privacy Concern," IEEE VR 2021 Workshop: Towards a Roadmap for Privacy and Security Research for Mixed Reality Applications, *In Press*.

CE1. L. Buck, "The Modulation of Peripersonal Space Boundaries in Immersive Virtual Environments," *IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW)*, pp. 529-530, IEEE, May 2020.

Posters and Abstracts with Acceptance based on an Extended Abstract

P3. S.J. Hong, L. Buck, H.S. Lee, A. Prada, R. Bodenheimer, and S. Park, "Altered Peripersonal Space Boundaries in Schizophrenia: A Virtual Reality Study," *Schizophrenia Bulletin,* 45, pp. S274-S275, Great Clarendon St, Oxford OX2 6DP, England: Oxford Univ. Press, April 2019.

P2. L. Buck and B. Bodenheimer, "Delimitation of Peripersonal Space via Multisensory Interaction using the HTC Vive," *ACM Symposium on Applied Perception (SAP '18),* Vancouver, BC, August 2018.

P1. L. Buck, R. Paris, and B. Bodenheimer, "Distance Perception in the HTC Vive Pro," *ACM Symposium on Applied Perception (SAP '18),* Vancouver, BC, August 2018.

Invited Talks

T2. L. Buck and B. Bodenheimer, "Towards an Understanding of Near-Distance Interaction Space in Immersive Virtual Environments," *Person-To-Person Interactions: From Analysis to Applications Workshop,* Virtual Event, University of Rennes, France, June 2020.

T1. L. Buck, T. McNamara and B. Bodenheimer, "Acquisition of Spatial Knowledge by Dyads in Shared Immersive Virtual Environments," *Collective Spatial Cognition*, Santa Barbara, CA, University of California – Santa Barbara and the University of Alabama, April 2019.

Student Project Mentorship

Carlos Salas	2019	Affordances for Quantitative Measures of Immersion and Presence
Taylor Smith	2019	Affordances for Quantitative Measures of Immersion and Presence (C2)
May Liu	2019	Affordances for Quantitative Measures of Immersion and Presence
Albert Na	2019	Affordances for Quantitative Measures of Immersion and Presence
Priya Rajan	2019	NSF REU: Designing Virtual Worlds for Children
Irisa Myint	2019	NSF REU: Designing Virtual Worlds for Children
Priya Rajan	2018	NSF REU: Improving Wayfinding and Navigation in Virtual Reality (C1)
Margaret Cook	2017-18	The Effect of Virtual Avatars on Proxemics and Joint Affordances

Academic Involvement

CS 2231	Computer Organization (TA)
CS 3265	Introduction to Database Management Systems (TA)
CS 3892/5892	Special Topics: Virtual Reality Projects for Interdisciplinary Applications (TA, Project Mentor)
CS 3258/5258	Introduction to Computer Graphics (Guest Lecture, Clipping Algorithms)
CS 4279/5279	Software Engineering Project (TA)