Lauren E. Buck, Ph.D. Curriculum Vitae

Postdoctoral Research Fellow
School of Computer Science and Statistics
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Google Scholar: https://scholar.google.com/citations?user=gmTgvjcAAAAJ&hl=en
Personal Website: www.drlaurenbuck.com

Professional Interests

My research pertains to understanding how extended reality technologies (VR/MR/AR) mediate interaction and collaboration, and the psychological and ethical implications derived from these interactions. I approach my research through a multidisciplinary lens that encompasses computer science, cognitive psychology, behavioral psychology, and neuroscience. I am interested in extracting perceptual information from these environments to understand how to create high quality experiences that can be leveraged across multiple domains while protecting the security and privacy of users.

Education

Vanderbilt University, **Doctor of Philosophy in Computer Science** ..... October 2021
Dept. of Electrical Engineering and Computer Science, Nashville, TN, USA
Dissertation: "*Measuring the Components of Personal Space Cognition in Simulated Immersive Virtual Environments*"
Advisor: Dr. Bobby Bodenheimer

Vanderbilt University, **Master of Science in Computer Science** ..... September 2020
Dept. of Electrical Engineering and Computer Science, Nashville, TN, USA
Advisor: Dr. Bobby Bodenheimer

Samford University, **Bachelor of Science in Computer Science, Minor in Art** ..... May 2015
Dept. of Mathematics and Computer Science, Birmingham, AL, USA
Advisor: Dr. Brian Toone

Professional Experience

Trinity College Dublin, **Postdoctoral Research Fellow** ..... May 2022 – Present
School of Computer Science and Statistics, Dublin, Ireland
Advisor: Dr. Rachel McDonnell

Vanderbilt University, **Graduate Research Assistant** 2017-2021
Dept. of Electrical Engineering and Computer Science, Nashville, TN, USA
Learning in Virtual Environments Lab, 2018-2021
Collaboration with Park Clinical Neuroscience Lab, 2017-2021

Vanderbilt University, **Graduate Teaching Assistant** 2015-2017
Dept. of Electrical Engineering and Computer Science, Nashville, TN, USA

***Birmingham Museum of Art*, Database and Development Intern** …….. May-August 2014
Birmingham, AL, USA

Publications

Refereed Journal Articles

J5. L. Buck, S. Chakraborty, and B. Bodenheimer, "The Impact of Embodiment and Avatar Fit on Personal Space in Immersive Virtual Environments," *IEEE Transactions on Visualization and Computer Graphics*, In Press, Accepted November 2021.

J4. L. Buck, R. Paris, and B. Bodenheimer, "Distance Compression in the HTC Vive Pro: A Quick Revisitation of Resolution," *Frontiers in Virtual Reality*, 157, December 2021.

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,* sbab024, April 2021.

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 ≤ 25%*)

CF3. R. Paris, L. Buck, T. McNamara, and B. Bodenheimer, "Evaluating the Impact of Limited Physical Space on the Navigation Performance of Two Locomotion Methods in Immersive Virtual Environments," *IEEE Conference on Virtual Reality and 3D User Interfaces (VR)*, In Press, Accepted December 2021.

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

CE4. L. Buck and R. McDonnell, "Security and Privacy in the Metaverse: The Threat of the Digital Human," *ACM CHI Conference on Human Factors in Computing Systems*, Novel Challenges of Safety, Security, and Privacy in Extended Reality Workshop, In Press, Accepted March 2022.

CE3. L. Buck, M. F. Vargas, and R. McDonnell, "The Effect of Spatial Audio on the Virtual Representation of Personal Space," *IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW),* Sonic Interaction in Virtual Environments Workshop, In Press, Accepted January 2022.

CE2. L. Buck and B. Bodenheimer, "Privacy and Personal Space: Addressing Interactions and Interaction Data as a Privacy Concern," *IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW)*, pp. 399-400, March 2021.

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, May 2020.

Posters and Abstracts with Acceptance based on an Extended Abstract

P4. H.S. Lee, L. Buck, T. Baxter, S. Shenoy, B. Bodenheimer, and S. Park, "Effects of Perceived Social Threat on Self Other Boundary in Schizophrenia: A Virtual Reality (VR) Study of Peripersonal Space," *Schizophrenia International Research Society (SIRS '22)*, Florence, Italy, April 2022.

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

T3. L. Buck and B. Bodenheimer, "Peripersonal Space in Virtual Reality," *8th International Conference on Spatial Cognition*, Virtual Event, Sapienza Università di Roma, Rome, Italy, September 2021.

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, USA, University of California – Santa Barbara and the University of Alabama, April 2019.

Invited Panels

IP2. XR Data Classification Roundtable: Understanding the impact of XR Data Collection on Human Rights, Work, Education and Commerce*, XRSI XR Safety Week*, Virtual Event, December 2021.

IP1. Immersive Technology: Use and Privacy*, Future of Privacy Forum*, Virtual Event, Washington, DC, USA, November 2021.

Honors and Awards

2022	IEEE VR Inclusion, Diversity, and Accessibility (IDA) Scholarship
2021	C.F. Chen Best Paper Award in Computer Science (CF1)
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

Student Mentorship

Graduate Students (Ph.D.)

Mauricio Flores Vargas (Trinity College Dublin) ……2022-Present
Hugh Jordan (Trinity College Dublin) ……..2022-Present

Undergraduate Students

Carlos Salas (Vanderbilt Univ.) …….. 2019
Taylor Smith (Vanderbilt Univ.) …….. 2019
May Liu (Vanderbilt Univ.) …….. 2019
Albert Na (Vanderbilt Univ.) …….. 2019
Irisa Myint (Vanderbilt Univ.) …….. 2019
Priya Rajan (Vanderbilt Univ.) …….. 2018-19
Margaret Cook (Vanderbilt Univ.) …….. 2017-18

Academic Involvement

Computer Organization (CS 2231, Vanderbilt Univ.) …….. Teaching Assistant
Introduction to Computer Graphics (CS 3258/5258, Vanderbilt Univ.) …….. Guest Lecturer
Introduction to Database Management Systems (CS 3265, Vanderbilt Univ.) …….. Teaching Assistant
Software Engineering Project (CS 4279/5279, Vanderbilt Univ.) …….. Teaching Assistant
VR Projects for Interdisciplinary Applications (CS 3892/5892, Vanderbilt Univ.) …….. Teaching Assistant

Peer Reviewing

ACM Transactions on Applied Perception (TAP) (2021)
ACM Transactions on Human-Robot Interaction (THRI) (2021, 2022)
Cognitive Science (2021)
Computers in Human Behavior (2021, 2022)
Frontiers in Virtual Reality (2022)
Frontiers in Human Neuroscience (2022)
IEEE Conference on Virtual Reality and 3D User Interfaces (VR) (2020,2021)
IEEE International Symposium on Mixed and Augmented Reality (ISMAR) (2022)
IEEE Transactions on Visualization and Computer Graphics (TVCG) (2022)

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)