Haley Adams

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Research Interests

Perception | Virtual & Augmented Reality | Human-Computer Interaction | Accessibility

Education

PhD in Computer Science
Vanderbilt University | Nashville, TN, USA — 2016 - present
Advisor: Bobby Bodenheimer

BSc in Computer Science
Rhodes College | Memphis, TN, USA — 2011 - 2015
Advisor: Betsy Williams Sanders

Exchange Student in Information and Communication Technology
Griffith University | Southport, QLD, Australia — 2014

Research Experience

Graduate Research Assistant — Vanderbilt University
Department of Electrical Engineering and Computer Science — 2016 - present
- Project 1: Isolated properties of AR displays that contribute to depth misperception
- Project 2: Evaluated visualizations for improving accessibility for people with low vision in AR/VR
- Project 3: Simulated vision impairments from patient data using eye-tracked displays
- Project 4: Developed a deep learning walking-in-place system for infinite locomotion in VR
- Project 5: Designed an interface for visualization of ear anatomy in medical training
- Project 6: Revealed behavioural differences in children's motor recalibration after VR exposure

Magic Lab Intern — PlayStation
Reasearch & Development — 2019
- Conducted preliminary data collection and cleaning for reinforcement learning project

Undergraduate Research Assistant — Rhodes College
Department of Math and Computer Science — 2015 - 2016
- Integrated Oculus Rift DK2 and WorldViz PPT Tracking System to create collaborative experience
- Evaluated how virtual reality affects collaboration when users are unable to meet their collaborators in person prior

Undergraduate Research Assistant — University of Minnesota
Department of Computer Science — 2013
- Conducted preliminary work on a VR application for neurocognitive assessment

Publications

Journal & Conference Proceedings

Haley Adams, Sarah Creem-Regehr, Jeanine Stefanucci, and Bobby Bodenheimer. "Depth Perception in Augmented Reality: The Effects of Display, Shadow, and Position". *IEEE Virtual Reality (IEEE VR)*. 2022. [Accepted]

Haley Adams, Holly Gagnon, Jeanine Stefanucci, Sarah Creem-Regehr, and Bobby Bodenheimer. "Stay in Touch! Shape and Shadow Influence Surface Contact in XR Displays". *IEEE Transactions on Visualization and Computer Graphics (TVCG)*. 2021. [Submitted]

Haley Adams, Jeanine Stefanucci, Sarah Creem-Regehr, Grant Pointon, William Thompson,and Bobby Bodenheimer. "Shedding Light on Cast Shadows: An Investigation of Perceived Ground Contact in AR and VR". *IEEE Transactions on Visualization and Computer Graphics (TVCG)*. 2021.

Haley Adams. "Resolving Cue Conflicts in Augmented Reality". *IEEE Virtual Reality Abstracts and Workshops* . 2020.

Gayathri Narasimham, **Haley Adams**, John Rieser, and Bobby Bodenheimer. "Encoding Height: Egocentric Spatial Memory of Adults and Teens in a Virtual Stairwell". *Symposium on Applied Perception.* 2020.

Hansen Wu, **Haley Adams**, Grant Pointon, Sarah Creem-Regehr, Jeanine Stefanucci, and Bobby Bodenheimer. "Danger from the Deep: A Gap Affordance Study in Augmented Reality". *IEEE VR Workshop on Perceptual and Cognitive Issues in AR (PERCAR).* 2019.

Carlos Salas-Rosales, Grant Pointon, **Haley Adams**, Sarah Creem-Regehr, Jeanine Stefanucci, and Bobby Bodenheimer. "Distance Judgments to On- and Off-Ground Objects in Augmented Reality ". *IEEE Virtual Reality.* 2019.

Sara Hanson, Richard A. Paris, **Haley Adams**, and Bobby Bodenheimer. "Improving Walking in Place Methods with Individualization and Deep Networks". *IEEE Virtual Reality.* 2019.

Haley Adams, Justin Shinn, William G Morrel, Jack Noble, and Bobby Bodenheimer. "Development and evaluation of an immersive virtual reality system for medical imaging of the ear". *SPIE: Image-Guided Procedures, Robotic Interventions, and Modeling.* 2019.

Noorin Asjad, **Haley Adams**, Richard Paris, and Bobby Bodenheimer. "Perception of Height in Virtual Reality — A Study of Climbing Stairs". *In Proceedings of the ACM Symposium on Applied Perception (SAP).* 2018.

Haley Adams, Gayathri Narasimham, John Rieser, Sarah Creem-Regehr, Jeanine Stefanucci, and Bobby Bodenheimer. "Locomotive and Prism Recalibration of Children and Teens in Immersive Virtual Environments". *IEEE Transactions on Visualization and Computer Graphics (TVCG)*. 2018.

Haojie Wu, Daniel Ashmead, **Haley Adams**, and Bobby Bodenheimer. "3D Sound Rendering in a Virtual Environment to Evaluate Pedestrian Street Crossing Decisions at a Roundabout". *IEEE VR Workshop on Sonic Interactions for Virtual Environments (SIVE)*. 2018.

Haojie Wu, Daniel Ashmead, **Haley Adams**, and Bobby Bodenheimer. "Using Virtual Reality to Assess the Street Crossing Behavior of Pedestrians With Simulated Macular Degeneration at a Roundabout". *In Frontiers in Virtual Environments*. 2018.

Hannah Chipman, **Haley Adams**, Betsy Williams Sanders, D Brian Larkins "Evaluating Computer Science Camp Topics in Increasing Girls' Confidence in Computer Science". *Journal of Computing Sciences in Colleges*. 2018.

Erin Mindell Cannon, Priya Chawla, Katherine Lo, and **Haley Adams**. "igniteCS: Addressing Undergraduate CS Retention". *In Proceedings of the 47th ACM Technical Symposium on Computing Science Education (SIGCSE)*. 2016.

Presentations

Haley Adams. "A Strange View: Using Perception to Improve XR". *Hi5 Seminar Series, University of Mississippi.* 2020. *https://www.youtube.com/watch?v=ZbPsKN4H_nw*

Haley Adams, Jack Noble, William G. Morrel, Alejandro Rivas, Justin Shinn, Robert Labadie, and Bobby Bodenheimer. "Play it by Ear: An Immersive Ear Anatomy Tutorial". *In Proceedings of IEEE VR.* 2019.

Gayathri Narasimham, **Haley Adams**, John Rieser, Sarah Creem-Regehr, Jeanine Stefanucci, and Bobby Bodenheimer. "Spatial Memory of Children and Teens in Immersive Virtual Environments". *In Proceedings of the ACM Symposium on Applied Perception (SAP)*. 2018.

Alex Ayris, Richard Paris, and **Haley Adams**. "STEManism: Current and Future Horizons of Interdisciplinary Collaboration between the Humanities, Digital Humanities, and STEM". *In Proceedings of Humanities, Arts, Science, and Technology Alliance and Collaboratory (HASTAC)*. 2017.

Haley Adams, Chelsey Thompson, David Thomas, Farah Sharis, Catherine Grace Jernigan, Corrie Moore, and Betsy Williams. "The Effect of Interpersonal Familiarity on Cooperation in a Virtual Environment". *In Proceedings of the ACM Symposium on Applied Perception (SAP)*. 2015.

Haley Adams, Alyssa Crider, and Victoria Interrante. "Virtual Reality Implementation for Neurocognitive Assessment". *In Proceedings of Grace Hopper Celebration of Women in Computing*. 2013.

Teaching & Mentorship Experience

Graduate Teaching Assistant — Vanderbilt University
Department of Electrical Engineering and Computer Science — 2016 - 2018
- Evaluated assessments and provided meaningful feedback to 50-100 student classes in short time frames for Discrete Structures and Algorithms (CS 2212)
- Provided supplemental instruction to students on computer graphics principles and OpenGL programming. Assessed OpenGL and C++ code for Computer Graphics (CS 5258)
- Guest lectured for Discrete Structures and Algorithms (CS 2212), Virtual Reality for Interdisciplinary Applications (UNIV 3279), Introduction to Visualization (CS 5891), & Augmented Virtual Reality (CS 8395)
- Served as Experienced TA Panelist at Teaching Assistant Orientation

Graduate Research Mentor — Vanderbilt University
School of Science and Math — 2016 - 2019
- Dictated project milestones and facilitated communication with research faculty
- Guided development of fundamental research and software development skills in C# of high schoolers

Students Mentored

Carlos Salas · High school student in School for Science and Math	2018 - 2020
Hansen Wu · Undergraduate in Vanderbilt University	2018 - 2019
Priya Rajan · Undergraduate in Vanderbilt University	2018 - 2019
Nidhi Mehta · Undergraduate in Vanderbilt University	2018 - 2019
Peter Cho · Undergraduate in Vanderbilt University	2018 - 2019
Noorin Asjad · Undergraduate in Vanderbilt University	2017 - 2018
Taylor Nye Smith · High school student in School for Science and Math	2016 - 2017

Leadership & Service

Student Volunteer Chair
IEEE VR — 2020

Unity Development Workshop Leader
Vandy Hacks — 2018

Founding Member and Officer
ACM-W Student Chapters — 2013 - 2018
- Managed resources and mediated between students, faculty, and the ACM-W
- Provided opportunities for advancement and organized events with diverse speakers and recruiters

Event Organizer
Emerge - Emerging Technology Symposium — 2017
- Handled event logistics for half-day symposium, including food, advertisement, and audio/video
- Recruited and arranged accommodation for keynote speakers

Director, Instructor
Camp Codette 2015 - 2016
- Founded a persisting summer coding program for middle and high school girls
- Formulated curriculum, led team of undergraduate counselors, and instructed learning sessions
- Provided insights to Google Education and conferred pedagogical strategies for student retention in computer science

Technical Skills

Programming Languages | C# · Python · Matlab · Latex · C++ · HTML5 · CSS

3D and 2D Design | Unity Game Engine · Photoshop · Blender

Honors & Awards

Microsoft Research Dissertation Grant, **Microsoft** 2021 - present
Academic Merit Scholarship, **Vanderbilt University** 2016 - present
Vanderbilt IBM Fellowship, **Alumni Association** 2016 - 2020
igniteCS Grant, **Google** 2015, 2016
Presidential Scholarship, **Rhodes College** 2011 - 2015
Best Poster, **ACM Symposium on Applied Perception (SAP)** 2015