

# Haley Adams

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## Research Interests

PERCEPTION | VIRTUAL & AUGMENTED REALITY | HUMAN-COMPUTER INTERACTION | VISUALIZATION

## Education

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### 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

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### Research Assistant

DEPARTMENT OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCE

Vanderbilt University

2018 - present

- Project 1: Assessed what visual properties of holograms affect depth perception and action affordances in the Microsoft HoloLens
- Project 2: Developed a deep learning walking-in-place system for infinite locomotion in VR

### Graduate Researcher

DEPARTMENT OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCE

Vanderbilt University

2016 - 2018

- Project 1: Revealed behavioural differences in children's motor recalibration after VR exposure
- Project 2: Simulated vision impairments from patient data using a head-mounted display
- Project 3: Designed an interface for visualization of ear anatomy in medical training

### Undergraduate Research Assistant

DEPARTMENT OF MATH AND COMPUTER SCIENCE

Rhodes College

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

DEPARTMENT OF COMPUTER SCIENCE

University of Minnesota

2013

- Conducted preliminary work on a VR application for neurocognitive assessment

## Publications

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### Journal & Conference Proceedings

**HALEY ADAMS, SARAH CREEM-REGEHR, JEANINE STEFANUCCI, 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](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

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### 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)
- Guest lectured on inductive proofs to sophomore undergraduates for Discrete Structures and Algorithms (CS 2212)
- Guest lectured on 3D modeling for Virtual Reality for Interdisciplinary Applications (UNIV 3279)
- Guest lectured on Virtual Reality and Visualization for Introduction to Visualization (CS 5891)
- Instructed multiple class sessions for Augmented Virtual Reality (CS 8395)
- Served as Experienced TA Panelist at Teaching Assistant Orientation, 2017

### 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

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### 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

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**Programming Languages** | C# · PYTHON · MATLAB · LATEX · C++ · HTML5 · CSS

**3D and 2D Design** | UNITY GAME ENGINE · PHOTOSHOP · BLENDER

## Honors & Awards

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Microsoft Research Dissertation Grant, **Microsoft**

2021 - present

Academic Merit Scholarship, **Vanderbilt University**

2016 - present

Vanderbilt IBM Fellowship, **Alumni Association**

2016 - 2020

Presidential Scholarship, **Rhodes College**

2011 - 2015

Best Poster, **ACM Symposium on Applied Perception (SAP)**

2015