

# Talha Khan

Assistant Professor

College of Computing, Grand Valley State University, USA

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<https://talhakhan13.github.io/>   [Google Scholar](#)

## RESEARCH OVERVIEW

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My research lies in the general area of **human-computer interaction** (HCI). I design **mixed reality** (MR) technologies that enable novel ways of interacting with information. Much of my work explores applications of MR in **surgical settings**. At the same time, I study the challenges of **multi-user MR environments** and develop solutions that enhance both personal and shared experiences in these spaces. I have published my findings in leading venues such as ACM ISS, ACM SUI, and IEEE ISMAR.

## ACADEMIC EXPERIENCE

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- **Assistant Professor** AUG. 2025 - CURRENT  
College of Computing, Grand Valley State University, USA
- **Graduate Research Fellow** SEP. 2024 - APR. 2025  
Department of Computer Science, University of Pittsburgh, USA
- **Research Intern, Human-Centered AI** MAY. 2024 - AUG. 2024  
Toyota Research Institute, Los Altos, USA
- **Research Intern, Augmented Perception Lab** MAY. 2023 - AUG. 2023  
Carnegie Mellon University, Pittsburgh, USA  
Mentor: [DR. DAVID LINDLBAUER](#)
- **Graduate Student Researcher** MAY. 2021 - APR. 2024  
Department of Computer Science, University of Pittsburgh, USA

## EDUCATION

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- **PhD in COMPUTER SCIENCE** AUG. 2020 - APR. 2025  
University of Pittsburgh, USA  
Advisor: [DR. JACOB BIEHL](#)
- **MS in COMPUTER SCIENCE** SEP. 2018 - JUN. 2020  
University of California, Irvine, USA
- **BS in COMPUTER SCIENCE** AUG. 2014 - JUN. 2018  
Lahore University of Management Sciences, Pakistan

## TEACHING EXPERIENCE

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- **Course Instructor** AUG. 2020 - DEC. 2021  
Grand Valley State University, USA  
Courses: *Computer Science 1*
- **Graduate Teaching Assistant** SEP. 2020 - APR. 2021  
University of Pittsburgh, USA  
Courses: *Algorithm Implementation, Programming Language for Web Applications*

- **Graduate Teaching Assistant** Oct. 2018 - MAY. 2020  
University of California, Irvine, USA  
Courses: *Intermediate Programming (Python), Data Structures (C++), Intro to C++*
- **Undergraduate Teaching Assistant** SEP. 2017 - MAY. 2018  
Lahore University of Management Sciences, Pakistan  
Courses: *Applied Probability (Graduate-level), Probability*

## PUBLICATIONS

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### Conference & Proceedings Publications

- [C.5] MR-MDEs: Exploring the Integration of Mixed Reality into Multi-Display Environments  
Griffin Hurt, **Talha Khan**, Nicolás Kass, Anthony Tang, Edward Andrews, Jacob Biehl  
*To appear in (ACM ISS 2025)*
- [C.4] Shadows of Reality: Enhancing Bystander Awareness of Mixed Reality Interfaces  
**Talha Khan**, Abigail Zimmerman, Edward Andrews, David Lindlbauer, Jacob Biehl  
*(ACM SUI 2025)*
- [C.3] Don't Block My Stuff: Fostering Personal Object Awareness in Multi-user Mixed Reality Environments  
**Talha Khan**, David Lindlbauer  
*PACM HCI (ACM ISS 2024)*
- [C.2] Understanding Perceived Utility and Comfort of In-Home General-Purpose Sensing through Progressive Exposure  
Pranut Jain, Andrew Xu, Thomas Downes, Injung Kim, **Talha Khan**, Jacob Biehl, Adam Lee.  
*PACM HCI (ACM CSCW 2024)*
- [C.1] Understanding Effects of Visual Feedback Delay in AR on Fine Motor Surgical Tasks  
**Talha Khan**, Toby Zhu, Thomas Downes, Lucille Cheng, Nicolás Kass, Edward Andrews, Jacob Biehl.  
*IEEE TVCG (ISMAR 2023) Best Paper Award*

### Journal Publications

- [J.3] Evolution of the meta-neurosurgeon: A systematic review of the current technical capabilities, limitations, and applications of augmented reality in neurosurgery  
Nikhil Sharma, Arka Mallela, **Talha Khan**, Stephen Paul Canton, Nicolás Kass, Fritz Steuer, Jacquelyn Jardini, Jacob Biehl, Edward Andrews.  
*Surgical Neurology International 2024*
- [J.2] Solar-powered Parking Analytics System using Deep Reinforcement Learning  
Yoones Rezai, **Talha Khan**, Stephen Lee, Daniel Mossé  
*ACM TOSN 2023*
- [J.1] A systematic comparison of the accuracy of monocular RGB tracking and LiDAR for neuronavigation  
**Talha Khan**, Jacob Biehl, Edward Andrews, Dmitriy Babichenko  
*HTL 2022*

### Other Publications

- [W.3] Future of Surgical Mixed Reality: Cutting-Edge or Cutting Too Deep?  
**Talha Khan**, Edward Andrews, Jacob Biehl  
*IEEE VRW 2024*
- [W.2] EndovascuLAR: Utility of Mixed Reality to Segment Large Displays in Surgical Settings  
Griffin Hurt, **Talha Khan**, Michael Kann, Edward Andrews, Jacob Biehl  
*IEEE VRW 2024*
- [WiP.1] AR in the OR: exploring use of augmented reality to support endoscopic surgery  
**Talha Khan**, Edward Andrews, Paul Gardner, Arka Mallela, Jeffrey Head, Joseph Maroon, Georgios Zenonos, Dmitriy Babichenko, Jacob Biehl  
*ACM IMX 2022*
- [EA.1] AR in the OR: exploring use of augmented reality to support endoscopic surgery  
**Talha Khan**, Edward Andrews, Paul Gardner, Arka Mallela, Jeffrey Head, Joseph Maroon, Georgios Zenonos, Dmitriy Babichenko, Jacob Biehl  
*ACM IMX 2022*

## MENTORSHIP EXPERIENCE

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- Liam Adams AUG. 2025 - CURRENT  
BS Integrative Studies, Grand Valley State University, USA  
**Project:** *ReadAR: Using Mixed Reality for reading Physical Documents*
- Abigail Zimmerman SEP. 2024 - JAN. 2025  
BS Digital Narrative and Interactive Design, University of Pittsburgh, USA  
**Project:** *Shadows of Reality: Enhancing Bystander Awareness of Mixed Reality Interfaces (ACM SUI 2025)*
- Bo-Chen Kuo JAN. 2024 - APR. 2024  
MS Computer Science, University of Pittsburgh, USA  
**Project:** *Automatic Segmentation of Medical Appliance Buttons*
- Elliott Finney JAN. 2024 - APR. 2024  
BS Computer Science, University of Pittsburgh, USA  
**Project:** *Multi-modal Mixed Reality Interfaces for Medical Appliances*
- Griffin Hurt MAY. 2023 - APR. 2024  
BS Computer Science, University of Pittsburgh, USA  
**Project:** *MR-MDEs: Exploring the Integration of Mixed Reality into Multi-Display Environments (ACM ISS 2025)*
- Chloe Dahan JUN. 2021 - AUG. 2021  
BS Digital Narrative and Interactive Design, University of Pittsburgh  
**Project:** *Automatic Human-Humanoid Gesture Imitation*
- Aiden Dorneich JUN. 2021 - AUG. 2021  
Research Intern Facet Lab, University of Pittsburgh, USA  
**Project:** *Automatic Human-Humanoid Gesture Imitation*

## HONORS AND AWARDS

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- CS 50 Fellowship Award, Department of Computer Science, University of Pittsburgh APR. 2024
- Best Journal Paper Award, IEEE International Symposium of Mixed and Augmented Reality OCT. 2023
- Honorable Mention Award, Link Foundation Modelling, Simulation & Training Fellowship JUN. 2022

## MEDIA APPEARANCES

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- **Pitt To The Point** MAR. 2024  
*Revolutionizing Healthcare With Mixed Reality*

## INVITED TALKS

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- **Dean's Spotlight Series, University of Pittsburgh** JAN. 2023  
*AR in the OR: An Interdisciplinary Journey Towards the Holographic Operation Room*

## LEADERSHIP EXPERIENCE

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- **Business Manager** MAR. 2024 - APR. 2025  
Doctoral Guild at Pitt, University of Pittsburgh, USA
- **Founding Member** APR. 2023 - CURRENT  
*Surreality Lab*, University of Pittsburgh, USA

## REVIEWING SERVICE

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- IEEE International Conference on Virtual Reality and 3D User Interfaces (*IEEE VR 2026*)
- ACM CHI Conference on Human Factors in Computing Systems (*ACM CHI 2026*)
- ACM Symposium on Spatial User Interaction (*ACM SUI 2025*)
- ACM CHI Conference on Human Factors in Computing Systems (*ACM CHI 2025*)
- ACM Symposium on User Interface Software and Technology (*ACM UIST 2024*)
- ACM CHI Conference on Human Factors in Computing Systems (*ACM CHI 2024*)
- ACM CHI Conference on Human Factors in Computing Systems (*ACM CHI 2023*)
- ACM Conference On Computer-Supported Cooperative Work And Social Computing (*ACM CSCW 2023*)

## VOLUNTEER SERVICE

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- Student Volunteer, ACM Conference on Interactive Surfaces and Spaces (*ACM ISS 2023*)
- Student Volunteer, ACM Conference on Human Factors in Computing Systems (*ACM CHI 2022*)

## REFERENCES

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### **DR. JACOB BIEHL**

Associate Professor, Department of Computer Science, University of Pittsburgh, USA

• <https://jtbiehl.github.io/> | ✉ [biehl@pitt.edu](mailto:biehl@pitt.edu)

### **DR. DAVID LINDLBAUER**

Assistant Professor, Human-Computer Interaction Institute, Carnegie Mellon University, USA

• <https://www.davidlindlbauer.com/> | ✉ [davidlindlbauer@cmu.edu](mailto:davidlindlbauer@cmu.edu)

### **DR. ERIN WALKER**

Associate Professor, Department of Computer Science, University of Pittsburgh, USA

• <https://erinwalker.academicwebsite.com/> | ✉ [eawalker@pitt.edu](mailto:eawalker@pitt.edu)

### **DR. EDWARD ANDREWS**

Assistant Professor, Department of Neurological Surgery, University of Pittsburgh, USA

✉ [andrewse2@upmc.edu](mailto:andrewse2@upmc.edu)