

Talha Khan

Assistant Professor

College of Computing, Grand Valley State University, USA

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RESEARCH OVERVIEW

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**. I also study the challenges of **multi-user MR environments** and develop solutions that enhance both personal and shared experiences in these spaces.

ACADEMIC EXPERIENCE

- **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
Mentor: [DR. SCOTT CARTER](#)
- **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

- **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

- **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

PUBLICATIONS

Conference & Proceedings

- [C.4] Shadows of Reality: Enhancing Bystander Awareness of Mixed Reality Interfaces
Talha Khan, Abigail Zimmerman, Edward Andrews, David Lindlbauer, Jacob Biehl
To appear in (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
Yoonas 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

- Abby 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*
- 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
Thesis: ["Untethered Displays: The Effects of Mixed Reality on Split-Attention in Fine-Motor Tasks"](#)
- Aiden Dorneich JUN. 2021 - Aug. 2021
Research Intern Facet Lab, University of Pittsburgh, USA
Project: *Automatic Human-Humanoid Gesture Imitation*
- Chloe Dahan JUN. 2021 - Aug. 2021
BS Digital Narrative and Interactive Design, University of Pittsburgh
Project: *Automatic Human-Humanoid Gesture Imitation*

HONORS AND AWARDS

- 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

- **Pitt To The Point** MAR. 2024
[Revolutionizing Healthcare With Mixed Reality](#)

INVITED TALKS

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

LEADERSHIP EXPERIENCE

- **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
- **Founding Member** JAN. 2021 - APR. 2023
The Alba Tull Center for Neuroimaging and Therapeutics
University of Pittsburgh, USA

REVIEWING SERVICE

- 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

- 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

DR. JACOB BIEHL

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

🌐 <https://jtbiehl.github.io/> | ✉ biehl@pitt.edu

DR. DAVID LINDLBAUER

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

🌐 <https://www.davidlindlbauer.com/> | ✉ davidlindlbauer@cmu.edu

DR. SCOTT CARTER

Senior Staff Research Scientist, Toyota Research Institute, Los Altos, USA

🌐 <https://www.madpickle.net/scott/> | ✉ scott.carter@tri.global

DR. ERIN WALKER

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

🌐 <https://erinwalker.academicwebsite.com/> | ✉ eawalker@pitt.edu

DR. EDWARD ANDREWS

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

✉ andrewse2@upmc.edu