Yu Zhao

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Research Interest

I am a computer science researcher with a background in **Virtual** & **Augmented Reality (VR|AR)**, **Human-Computer Interaction**, and **Spatial Cognition** & **Navigation**. My main interests include: (1) understanding how people perceive and interact with virtual content compared to real-world objects; (2) creating large-scale outdoor AR experiences; (3) informing cognition-aware AR navigation design utilizing user behavior data.

Education

Vanderbilt University *Nashville, TN, US*

Doctoral of Philosophy in Computer Science *Aug 2019 - Current*

- Advisor: Dr. Bobby Bodenheimer

Beijing Language and Culture University *Beijing, CN*

Bachelor of Science in Digital Media Technology *Sept 2015 - June 2019*

- Bachelor of Science in Finance (Double Major)

Skills

Programming	C#, Python (Pandas, Numpy, Scikit-learn), R, C++, MATLAB, LaTeX, Git, Javascript, HTML5, CSS
Research & **Design**	Experimental Design, Quantitative & Qualitative Methods, Rapid Prototyping, Eye Tracking, Inferential Statistics
Mixed Reality Experience	Unity3D, Varjo XR-3, HoloLens 2, Magic Leap 2, Oculus Quest 2, HTC Vive Pro, ARKit, ARCore, Vuforia

Professional Experience

Department of Computer Science, Vanderbilt University *Nashville, TN, US*

Graduate Research Assistant *2020 - present*

- Summarized research progress in AR navigation from technical and human-factors aspects by conducting PRISMA-guided systematic review.
- Designed, developed, and evaluated AR navigation interfaces for head-worn displays by conducting user study with 81 participants.
- Extracted behavior metrics from 7GB of structured head and eye tracking data and conducted statistical analysis to inform AR navigation design.
- Implemented outdoor AR navigation experience on HoloLens 2 by integrating GNSS global positioning with Kalman filter.
- Executed a distributed remote user study with 32 participants to assess AR action affordances on Android & iOS mobile phones.
- Evaluated depth perception in action space using cutting-edge commercial optical and video see-through AR displays.

Deloitte Consulting (Shanghai) Ltd. Beijing Branch *Beijing, CN*

Intern, Analytics and Information Management *07/2018 - 12/2018*

- Collaborated with stakeholders to identify business needs and information system features.
- Analyzed data for business insights and visualized data by Tableau.

Selected Publications

Enhancing Head-Worn Augmented Reality Navigation Design with Eye Tracking
Yu Zhao, Jeanine Stefanucci, Sarah Creem-Regehr, Bobby Bodenheimer
IEEE Transactions on Visualization and Computer Graphics(In review) (2023). 2023

Evaluating Augmented Reality Landmark Cues and Frame of Reference Displays with Virtual Reality
Yu Zhao, Jeanine Stefanucci, Sarah Creem-Regehr, Bobby Bodenheimer
IEEE Transactions on Visualization and Computer Graphics 29.5 (2023) pp. 2710–2720. IEEE, 2023

Gap affordance judgments in mixed reality: testing the role of display weight and field of view
Holly Gagnon, Yu Zhao, Matthew Richardson, Grant Pointon, Jeanine Stefanucci, Sarah Creem-Regehr, Bobby Bodenheimer
Frontiers in Virtual Reality 2 (2021) p. 654656. Frontiers Media SA, 2021

The effect of feedback on estimates of reaching ability in virtual reality
Holly C Gagnon, Taren Rohovit, Hunter Finney, Yu Zhao, John Franchak, Jeanine Stefanucci, Bobby Bodenheimer, Sarah Creem-Regehr
2021 IEEE Virtual Reality and 3D User Interfaces (VR), 2021

Remote Mobile Augmented Reality for Spatial Cognition
Yu Zhao, Soumyajit Chakraborty, Jeanine Stefanucci, Sarah H Creem-Regehr, Bobby Bodenheimer
CHI Conference on Human Factors in Computing Systems - Remote XR Workshop (2021). 2021

The perception of affordances in mobile augmented reality
Yu Zhao, Jeanine Stefanucci, Sarah H Creem-Regehr, Bobby Bodenheimer
ACM Symposium on Applied Perception 2021, 2021

Honors & Awards

University Graduate Fellowships, Vanderbilt University *2019 - present*

National Scholarship, Ministry of Education of the People's Republic of China *2018*

Honorable Mention, Interdisciplinary Contest in Modeling *2018*