

# YOONSANG KIM (Academic advisor: Dr. Arie E. Kaufman)

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## RESEARCH INTERESTS

Multimodal interaction in XR | Cross-platform XR | Personalized Context-aware systems | Ubiquitous XR | Prototyping | XR Security and privacy

**Keywords:** AR | MR | XR | Visuospatial | Personal Context-aware | Human-centered AI | Ubiquitous Computing | User Interface | Security/Privacy

## EDUCATION

<b>Stony Brook University</b> <i>Ph.D. Candidate., Computer Science (GPA: 3.83/4)</i>	Stony Brook, NY (Aug. 2020 – Present)
<b>Stony Brook University</b> <i>M.S., Computer Science (GPA: 3.68/4)</i>	Stony Brook, NY (Aug. 2018 – May. 2020)
<b>Darmstadt University of Applied Sciences</b> <i>Exchange Student (via Soongsil University Program)</i>	Darmstadt, Germany (Mar. 2015 – Jul. 2015)
<b>Soongsil University</b> <i>B.S., Computer Science and Engineering</i>	Seoul, Korea (Mar. 2010 – Feb. 2017)

## RESEARCH AND TECHNICAL EXPERIENCE

<b>Stony Brook University</b> <i>Research Assistant</i>	Stony Brook, NY May. 2022 – Present
<ul style="list-style-type: none"><li>Designing next generation <b>ubiquitous, spatiotemporal context-aware</b> XR system with multimodal LLM</li><li>Prototyping <b>interactive</b> recommender system using <b>RAG LLM</b> for <b>personalized</b> AR experience</li><li>Conducting research on <b>personal context-aware</b> system for cross-virtuality (cross-device, remote)</li><li>Researching <b>conversational, cross-reality</b> (AR-to-VR) interface for remote <b>collaboration</b></li><li>Investigating <b>spatial computing</b> (PC-2D vs MR) for network security applications with Apple Vision Pro</li><li>Designed end-to-end <b>analytics</b> framework for user behaviors in XR environments (AR, VR, MR) using <b>multimodal (visual, audio, interaction) cues</b></li><li>Implemented hand-held system (tablet, mobile) for <b>collaborative</b> multi-user AR experience</li><li>Proposed a novel mobile AR framework for <b>co-located collaboration</b> in immersive <b>tiled displays</b></li><li>Developed a novel design of OS-level <b>access control</b> system in AR for <b>privacy-protection</b></li><li>Explored the applications of local &amp; remote <b>rendering</b></li><li>Explored <b>situated visualization</b> for optimal volume <b>placement</b></li><li>Studied <b>mapping/synchronization</b> of coordinate systems in <b>digital twin</b></li></ul>	
<i>Graduate Student Researcher</i>	Stony Brook, NY May. 2020
<ul style="list-style-type: none"><li>Studied platform/<b>device-agnostic</b> properties for scientific (volume rendering) /information <b>visualization</b></li><li>Explored the applications of <b>gesture-based input</b> in Virtual Reality using Leap motion</li><li>Designed Shark<sup>2</sup> algorithm (shape/location channel) for Unity C# to utilize across <b>multi-platforms</b></li></ul>	
<b>Soongsil University</b> <i>Undergraduate Student Researcher</i>	Seoul, Korea Jul. 2018
<ul style="list-style-type: none"><li>Developed <b>hand gesture recognizer</b> for MR <b>remote desktop</b> settings</li><li>Developed an <b>immersive remote</b> desktop screen <b>network streaming</b> system in C and Unity C# utilizing virtualized graphics card and WINAPI hooking</li></ul>	

## PUBLICATIONS

- Yoonsang Kim**, Divyansh Pradhan, Devshree Jadeja, Arie Kaufman.  
From Speech-to-Spatial: Grounding Utterances on Live Shared View with Augmented Reality. (**Under review**).
- Yoonsang Kim**, Devshree Jadeja, Divyansh Pradhan, Yalong Yang, Arie Kaufman.  
Memento: Spatial Remembrance of Routine Memories with Conversational Personal Assistant in XR. (**Under review**).
- Doris Gutierrez, **Yoonsang Kim**, Amir Rahmati, Arie Kaufman.  
Mixed Reality vs. 2D PC Interface for Network Security Tasks: A Comparative Study. (**Under review**)
- Matthew Castellana, Chahat Kalsi, **Yoonsang Kim**, Saeed Boorboor, Arie Kaufman.  
[AuxiScope: Handheld Augmented Reality Tablet as an Auxiliary Display for Large-Scale Display Systems](#). IEEE ISMAR. 2025.
- Yoonsang Kim**, Zainab Aamir, Mithilesh Singh, Saeed Boorboor, Klaus Mueller, Arie Kaufman.  
[Explainable XR : Understanding User Behaviors of XR Environments using LLM-assisted Analytics Framework](#). IEEE VR (TVCG). 2025.
- Saeed Boorboor, **Yoonsang Kim**, Ping Hu, Josef M Moses, Brian A Colle, Arie Kaufman.  
[Submerse: Visualizing Storm Surge Flooding Simulations in Immersive Display Ecologies](#). IEEE TVCG. 2023.
- Saeed Boorboor, Matthew Castellana, **Yoonsang Kim**, Zhutian Chen, Johanna Beyer, Hanspeter Pfister, Arie Kaufman.  
[VoxAR: Adaptive Visualization of Volume Rendered Objects in Optical See-Through Augmented Reality](#). IEEE TVCG. 2023.
- Yoonsang Kim**, Sanket Goutham, Amir Rahmati, Arie Kaufman.  
[Erebus: Access Control for Augmented Reality Systems](#). USENIX Security. 2023.
- Yoonsang Kim**, Saeed Boorboor, Amir Rahmati, Arie Kaufman.  
[Design of Privacy Preservation System in Augmented Reality](#). IEEE VizSec Poster. 2021.

- Yu-Jung Ko, Hang Zhao, **Yoonsang Kim**, IV Ramakrishnan, Shumin Zhai, Xiaojun Bi. [Modeling Two-Dimensional Touch Pointing](#). UIST. 2020.
- Suwen Zhu, **Yoonsang Kim**, Jingjie Zheng, Jennifer Yi Luo, Liuping Wang, Xiangmin Fan, Feng Tian, Xiaojun Bi. [Using Bayes' Theorem for Command Input: Principle, Models, and Applications](#). CHI. 2020.
- **Yoonsang Kim**, Geunyeop Ha, Sangjun Lee. [Flexible Remote-Control Application for Virtual Reality using Virtual Graphics Driver and OpenCV](#). IJAER. 2017.

## ACADEMIC SERVICES

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|---|--------------------------|
| • Reviewer of IEEE ISMAR (Recognized for Outstanding Reviews) | 2025 (Currently Serving) |
| • Reviewer of IEEE PacificVIS                                 | 2025 (Currently Serving) |
| • Reviewer of ACM ISS   | 2025 (Currently Serving) |
| • Reviewer of ACM UIST  | 2025 (Currently Serving) |
| • Reviewer of ACM IMWUT                                       | 2025 (Currently Serving) |
| • Reviewer of ACM SUI   | 2025 (Currently Serving) |
| • Reviewer of ACM VRST  |                          |

## HONORS AND AWARDS

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|---|-----------|
| • Best Data Science/AI Award. SBU Hackathon. Stony Brook University                   | Sep. 2019 |
| • Dean's Award. Software Competition. Soongsil University                             | Oct. 2016 |
| • National Semi-Finalist. Microsoft Imagine Cup. Microsoft Korea                      | Mar. 2016 |
| • Gold Award. IT·BT Software Convergence Engineering Competition. Soongsil University | Dec. 2015 |

## LEADERSHIP EXPERIENCE

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<b>Stony Brook University</b>	Stony Brook, NY
<i>Teaching Assistant</i>	May. 2022

- Assisted lecture/assignment preparation for professors of courses (VR, HCI, Visualization, OS)

*Research Mentor*

- Mentored 2 high school, 4 undergraduate, and 9 graduate students to design an algorithm in the domains of Mobile AR, Device localization in AR, User interface, and Information visualization

<b>Soongsil University</b>	Seoul, Korea
<i>Exchange Student Program Mentor</i>	Dec. 2016

- Helped the incoming students of exchange student program & shared experience

<b>Republic of Korea Army</b> (The 31 <sup>st</sup> Infantry Division Engineering Battalion)	Gwangju, Korea
<i>Financial &amp; Personnel Administrator in Human Resources</i>	Jan. 2013

- Served military duty at the HQ in the Engineering battalion as Financial & Personnel administrator

## TECHNICAL SKILLS

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Language	C#, Python, C, C++, HLSL, Compute Shader, JavaScript, Java, Go
Tool/Framework/API	Unity, AR Foundation (ARCore/ARKit; Android/iOS/Meta Horizon OS/Vision OS), Cursor AI, OpenAI/Gemini API, Vuforia SDK, OpenGL, D3.js, WINAPI, MFC, WPF, MySQL, DB2, HTML, CSS

## LANGUAGES

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Korean	Native
English	Full professional working proficiency: TOEFL 110 (27/27/28/28)
German	Elementary proficiency: A1(Beginner level)