

# YOONSANG KIM

yoonsakim@cs.stonybrook.edu | [linkedin.com/in/yoonsang-kim-jake/](https://www.linkedin.com/in/yoonsang-kim-jake/)

## RESEARCH INTERESTS

Cross-platform/device-agnostic systems for AR/VR/MR | Context-aware immersive visualization | Ubiquitous XR | Intelligent interface | Prototyping | Security and privacy in digital twin

**Keywords:** AR | MR | Intelligent Interface | Human-centered AI | Ubiquitous Computing | Visualization | XR Security/Privacy

## EDUCATION

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

## RESEARCH AND TECHNICAL EXPERIENCE

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| <b>Stony Brook University</b><br><i>Research Assistant</i>   | Stony Brook, NY<br>May. 2022 – Present |
| <ul style="list-style-type: none"><li>Designing next generation <b>ubiquitous</b> interface and <b>context-aware</b> XR using 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>context-aware adaptive</b> UI <b>across virtuality</b> (cross-device, co-located, remote)</li><li>Researching <b>conversational, cross-reality</b> (AR/MR-to-VR) interface for remote <b>collaboration</b></li><li>Investigating <b>spatial computing</b> for network security applications using 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<br>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><br><i>Undergraduate Student Researcher</i>  | Seoul, Korea<br>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**, Prantik Howlader, Yalong Yang, Arie Kaufman. IEEE ISMAR. 2025. **(Under Review)**
- Matthew Castellana, Chahat Kalsi, **Yoonsang Kim**, Saeed Boorboor, Arie Kaufman. IEEE ISMAR. 2025. **(Under Review)**
- 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. [Submerge: 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 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) |

## 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)  |                 |
| <i>Research Mentor</i>  |                 |
| • 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</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), 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)                     |