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

Stony Brook University
Ph.D. Candidate., Computer Science (GPA: 3.83/4)
Stony Brook, NY
(Aug. 2020 – Present)

Stony Brook University
M.S., Computer Science (GPA: 3.68/4)
Stony Brook, NY
(Aug. 2018 – May. 2020)

Darmstadt University of Applied Sciences
Exchange Student (via Soongsil University Program)
Darmstadt, Germany
(Mar. 2015 – Jul. 2015)

Soongsil University
B.S., Computer Science and Engineering
Seoul, Korea
(Mar. 2010 – Feb. 2017)

RESEARCH AND TECHNICAL EXPERIENCE

Stony Brook University
Research Assistant
Stony Brook, NY
May. 2022 – Present

- Designing next generation **ubiquitous**, **spatiotemporal context-aware** XR system with multimodal LLM
- Prototyping **interactive** recommender system using **RAG LLM** for **personalized** AR experience
- Conducting research on **personal context-aware** system for cross-virtuality (cross-device, remote)
- Researching **conversational, cross-reality** (AR-to-VR) interface for remote **collaboration**
- Investigating **spatial computing** (PC-2D vs MR) for network security applications with Apple Vision Pro
- Designed end-to-end **analytics** framework for user behaviors in XR environments (AR, VR, MR) using **multimodal (visual, audio, interaction) cues**
- Implemented hand-held system (tablet, mobile) for **collaborative** multi-user AR experience
- Proposed a novel mobile AR framework for **co-located collaboration** in immersive **tiled displays**
- Developed a novel design of OS-level **access control** system in AR for **privacy-protection**
- Explored the applications of local & remote **rendering**
- Explored **situated visualization** for optimal volume **placement**
- Studied **mapping**/**synchronization** of coordinate systems in **digital twin**

Graduate Student Researcher
Stony Brook, NY
May. 2020

- Studied platform/**device-agnostic** properties for scientific (volume rendering) /information **visualization**
- Explored the applications of **gesture-based input** in Virtual Reality using Leap motion
- Designed Shark² algorithm (shape/location channel) for Unity C# to utilize across **multi-platforms**

Soongsil University
Undergraduate Student Researcher
Seoul, Korea
Jul. 2018

- Developed **hand gesture recognizer** for MR **remote desktop** settings
- Developed an **immersive remote** desktop screen **network streaming** system in C and Unity C# utilizing virtualized graphics card and WINAPI hooking

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. ACM 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. ACM 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

• 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	*2025 (Currently Serving)*

HONORS AND AWARDS

• 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

Stony Brook University   Stony Brook, NY
Teaching Assistant   *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

Soongsil University   Seoul, Korea
Exchange Student Program Mentor   *Dec. 2016*
- Helped the incoming students of exchange student program & shared experience

Republic of Korea Army (The 31st Infantry Division Engineering Battalion)   Gwangju, Korea
Financial & Personnel Administrator in Human Resources   *Jan. 2013*
- Served military duty at the HQ in the Engineering battalion as Financial & Personnel administrator

TECHNICAL SKILLS

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

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