YOONSANG KIM

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RESEARCH INTERESTS

User collaboration/interaction in immersive environments | Cross-platform/device-agnostic systems for AR/VR/MR
Intelligent interface | Information visualization | Prototyping | Security and privacy in digital twin
Keywords : AR | MR | Data Visualization | Interface | Collaboration/Interaction in XR | Computer Graphics | XR Security/Privacy

EDUCATION

Stony Brook University — Stony Brook, NY
Ph.D. Candidate., Computer Science — Aug. 2020 – Present

Stony Brook University — Stony Brook, NY
M.S., Computer Science — May. 2020

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

Soongsil University — Seoul, Korea
B.S., Computer Science and Engineering — Feb. 2017

RESEARCH AND TECHNICAL EXPERIENCE

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

- Proposed a novel mobile AR framework for cross-device collaboration in immersive tiled displays
- Developed a novel design of OS-level privacy-protection in Augmented Reality
- Explored the applications of local & remote rendering
- Studied optimal data placement & visualization in multi-user settings
- Explored situated visualization for optimal volume placement
- Studied mapping/synchronization of coordinate systems in digital twin
- Studied interaction in neural/gaussian-represented virtual scene

Graduate Research Intern — Stony Brook, NY — May. 2020

- Studied platform/device-agnostic properties for scientific/information visualization
- Explored applications of the platform & designed a volume renderer (HLSL/Compute) in Unity
- Studied Optimal information placement & designed a best placement scoring function using the properties of color and lighting in an image

Graduate Research Intern — Stony Brook, NY — May. 2019

- Explored the applications of gesture-based input in Virtual Reality
- Designed Shark² algorithm (shape/location channel) for Unity C# to utilize across multi-platforms

Soongsil University — Seoul, Korea
Undergraduate Research Intern — Jul. 2018

- Conducted performance analysis of an object detection/segmentation model and its portability to lightweight computation environment (Mobile/Untethered VR HMD)
- Developed gesture recognizer for Mixed Reality remote desktop settings
- Developed a remote desktop screen streaming system in C and Unity C# utilizing virtualized graphics card and WINAPI hooking

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, 1 undergraduate, and 5 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

The 31st Infantry Division Engineering Battalion — Gwangju, Korea
Financial & Personnel Administrator (Human Resources) — Jan. 2013

- Served 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), Vuforia SDK, OpenGL, D3.js, WINAPI, MFC, WPF, MySQL, DB2, HTML, CSS

PUBLICATIONS

- Saeed Boorboor, **Yoonsang Kim**, Ping Hu, Josef M Moses, Brian A Colle, Arie E 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 E Kaufman. “VoxAR: Adaptive Visualization of Volume Rendered Objects in Optical See-Through Augmented Reality”. IEEE TVCG. 2023.
- **Yoonsang Kim,** Sanket Goutham, Amir Rahmati, Arie E Kaufman. “Erebus: Access Control for Augmented Reality Systems”. USENIX Security. 2023.
- **Yoonsang Kim,** Saeed Boorboor, Amir Rahmati, Arie E 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. 12(19). 8952-8955. 2017.

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

LANGUAGES

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