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HyeongYeop Kang

Contact Information

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Research Interests

Computer Graphics, Extended Reality (including Mixed Reality, Virtual Reality and Augmented Reality), Virtual Agents, Character Animation, Artificial Intelligence, Reinforcement Learning, Human-computer Interaction, Computer-generated Holography

Education

Korea University, Seoul, Korea

Ph.D., Computer Science and Engineering, March 2012 - August 2017

- Thesis: *Multi-resolution Terrain Rendering with Unlimited Detail and Resolution*
- Advisors: JungHyun Han, Ph.D

B.S., Computer and Communication Engineering, March 2008 - February 2012

Positions Held

Assistant Professor September 2024 - present
Department of Computer Science and Engineering, Korea University

Head of the Software Convergence Department March 2021 - August 2024
Department of Software Convergence (graduate school), Kyung Hee University

Assistant Professor March 2020 - August 2024
Department of Software Convergence, Kyung Hee University

Assistant Professor September 2019 - February 2020
Software, Media and Industrial Engineering Department, Kangwon National University

Research Professor September 2018 - August 2019
Next Generation Game Research Center, Korea University

Research Professor September 2017 - August 2018
Computer Science and Engineering Research Center, Korea University

Conference & journal papers

1. Jongwook Jeong, Myeongseok Kwak, and **HyeongYeop Kang***, Visual Interfaces to Mitigate Eye Problems in a Virtual Environment via Triggering Eye Blinking and Movement, **IEEE Transactions on Human-Machine System (THMS)**, Mar 2025 (**IF = 4.453, Q1, JCR 17%**).

2. ByungMin Kim, DongHeun Han, and **HyeongYeop Kang***, Shaping the Future of VR Hand Interactions: Lessons Learned from Modern Methods, **IEEE Conference on Virtual Reality and 3D User Interfaces (IEEE VR)**, Mar 2025.

3. Seungwon Seo[1], Seongrae Noh[1], Junhyeok Lee, Soobin Lim, Won Hee Lee, and **HyeongYeop Kang***, REVECA: Adaptive Planning and Trajectory-based Validation in Cooperative Language Agents using Information Relevance and Relative Proximity, **Association for the Advancement of Artificial Intelligence (AAAI)**, Mar 2025 (Oral Presentation, Top 5%).

4. Seungjeh Chung, Joohyun Park, and **HyeongYeop Kang***, 3DStyleGLIP: Part-Tailored Text-Guided 3D Neural Stylization, **Pacific Graphics (PG)**, Oct 2024.

5. Joohyun Park, Yujin Jeon, HuiYong Kim, SeungHwan Baek, and **HyeongYeop Kang***, P-Hologen: An End-to-End Generative Framework for Phase-Only Holograms, **Pacific Graphics (PG)**, Oct 2024.

6. KyoungMin Kim and **HyeongYeop Kang***, DAMO: A Deep Solver for Arbitrary Marker Configuration in Optical Motion Capture, **ACM Transactions on Graphics** (**ToG**, Siggraph 2025 invited), Sep 2024 (**IF = 7.711, Q1, JCR 5%**).

7. SooBin Lim, SeungWon Seo and **HyeongYeop Kang***, DARAM: Dynamic Avatar-Human Motion Remapping Technique for Realistic Virtual Stair Ascending Motions, **ACM SIGGRAPH**, Jul 2023.

8. SeungJeh Chung, Taehun Lee, Bora Jeong, Jongwook Jeong and **HyeongYeop Kang***, VRCAT: VR Collision Alarming Technique for User Safety, **The Visual Computer**, Vol. 39, No. 7, Jul 2023, pp. 3145-3159.

9. DongHeun Han, Roun Lee, KyoungMin Kim and **HyeongYeop Kang***, VR-HandNet: A Visually and Physically Plausible Hand Manipulation System in Virtual Reality, **IEEE Transactions on Visualization and Computer Graphics** (**TVCG**), Mar 2023 (**IF = 5.226, Q1, JCR 10%**).

10. MinYeong Seo and **HyeongYeop Kang***, VR Blowing: A Novel Interaction Method for Blowing Air in the Virtual Reality, **IEEE Transactions on Visualization and Computer Graphics** (**TVCG**), Jan 2023 (**IF = 5.226, Q1, JCR 10%**).

11. Cheolwoo Lee, Seokhee Jeon, Waseem Hassan and **HyeongYeop Kang***, VR Unseen Gaze: Inducing Feeling of Being Stared At in Virtual Reality, **Virtual Reality**, Jan 2023 (**IF = 5.095, Q1, JCR 20%**).

12. MinYeong Seo and **HyeongYeop Kang***, Towards virtual stair walking, **The Visual Computer**, Vol. 37, No. 9, June 2021.

13. DongHeun Han, ChulWoo Lee and **HyeongYeop Kang***, Gravity Control-based Data Augmentation Technique for Improving VR User Activity Recognition, **Symmetry**, Vol. 13, No. 5, May 2021.

14. Jong-chul Yoon and **HyeongYeop Kang***, Interactive learning in the classroom: A mobile augmented reality assistance application for learning, **Computer Animation and Virtual Worlds**, January 2021.

15. **HyeongYeop Kang** and Junghyun Han*, SafeXR: Alerting Walking Persons to Obstacles in Mobile XR Environments, **The Visual Computer**, 36.10-12: 2065-2077, July 2020.

16. Geonsun Lee, **HyeongYeop Kang**, Jongmin Lee and Junghyun Han*, "A User Study on View-sharing Techniques for One-to-Many Mixed Reality Collaborations," **IEEE Conference on Virtual Reality and 3D User Interfaces** (**IEEE VR**), March 22 - 26, 2020, Atlanta, Georgia, United States (**Best conference paper nominee**)

17. **HyeongYeop Kang**, Geonsun Lee and Junghyun Han*, "Obstacle detection and alert system for smartphone AR users," **ACM Symposium on Virtual Reality Software and Technology** (**ACM VRST**), October 31 - November 2, 2019, Sydney, Australia

18. **HyeongYeop Kang**, Geonsun Lee and Junghyun Han*, "Visual Manipulation for Underwater Drag Force Perception in Immersive Virtual Environments," **IEEE Conference on Virtual Reality and 3D User Interfaces** (**IEEE VR**), March 25-27, 2019, Osaka, Japan (**Best conference paper nominee**)

19. **HyeongYeop Kang**, Geonsun Lee, Dae Seok Kang, Ohung Kwon, Jun Yeup Cho, Ho-Jung Choi and Junghyun Han*, "Jumping Further: Forward Jumps in a Gravity-reduced Immersive Virtual Environment," **IEEE Conference on Virtual Reality and 3D User Interfaces** (**IEEE VR**), March 25-27, 2019, Osaka, Japan (**Best conference paper nominee**)
20. **HyeongYeop Kang**, Yeram Sim and Junghyun Han*, "Terrain Rendering with Unlimited Detail and Resolution," **Graphical Models**, Vol.97, May 2018, pp. 64-79
21. **HyeongYeop Kang**, Geonsun Lee, Seongsu Kwon, Ohung Kwon, Seongpil Kim and JungHyun Han*,"Flotation Simulation in a Cable-driven Virtual Environment - A Study with Parasailing," **ACM Conference on Human Factors in Computing Systems** (**CHI**), April 21-26, 2018, Montreal, Canada
22. **HyeongYeop Kang** and Junghyun Han*, "Feature-preserving procedural texture," **The Visual Computer**, Vol. 33, No. 6-8, June 2017
23. **HyeongYeop Kang**, Hanyoung Jang, Chang-Sik Cho and JungHyun Han*, "Multi-resolution terrain rendering with GPU tessellation," **The Visual Computer**, Vol. 31, No. 4, April 2015, pp. 455-469

Poster

1. **HyeongYeop Kang**, Geonsun Lee and JungHyun Han, "SafeAR: AR Alert System Assisting Obstacle Avoidance for Pedestrians," **International Symposium on Mixed and Augmented Reality** (**IEEE ISMAR**), October 14-18, 2019, Beiging, China (poster)

Book

The Future of the Metaverse: Hyper-Realistic Technologies 2022
Tak Woo, Seokhee Jeon and **HyeongYeop Kang**, Kyung Hee University Communication & Press, ISBN = 9788982227226

Government Grants

National Research Foundation of Korea (NRF) 2020 - 2023
Obstacle Detection and Alert System for Multi-user Extended Reality,
Principal Investigator

Korea Creative Content Agency (KOCCA) 2017 - 2020
Telepresence and Remote Interaction,
Participant (as a research professor)

National Research Foundation of Korea (NRF) 2016 - 2020
Drone Navigation Assistance System Using 360 Camera and HMD,
Participant (as a research professor)

Industry Grants

FunctionBay 2025 - 2026
Battlefield Simulation Software Development,
Principal investigator

FunctionBay 2023 - 2024
Manned and Unmanned Integrated Combat System Simulation Development,
Co-investigator

Korea Electronics Technology Institute 2023

Development of Motion Generation Technology for Anti-Intrusion Avatar in Choreography Animation,
Principal Investigator

Korea Electronics Technology Institute 2023
An Advanced Module for Generating IMU and Video-Based Training Data,
Principal Investigator

NCSOFT 2023 - 2024
Persona-aware NPC gesture motion synthesis,
Principal Investigator

NCSOFT 2022 - 2023
Style-controllable Gesture Synthesis Using Persona Categorization,
Principal Investigator

Samsung Future Technology Promotion Project 2022 - 2025
Phase Hologram Generation and Compression based on Circular Representation and Randomness Regularization,
Co-investigator

Pearl Abyss 2021 - 2023
Pearl Abyss × KHUSWCON Fellowship Project,
Principal Investigator

Patents

Device and method for generating generative model-based phase holograms
(KR 10-2024-0019602, 2024)

A Method of Reconstructing Human Pose from Unordered Sparse Point Cloud and a Computer Program for Executing the Same
(KR 10-2023-0157467, 2023)

Avatar-Human Motion Remapping Method and a Computer Program for Executing the Same
(KR 10-2023-0152298, 2023)

Apparatus for Virtual Hand Motion Generation based on Controller and Method for Thereof
(KR RS-2022-00155911, 2022)

Virtual Reality Service Providing User Device, Method and System
(KR 1-1-2022-0479539-49, 2022)

Method for Rendering Terrain
(US 9959670 B2, 2018)

Method for Rendering Terrain
(KR 002497, 2014)

Awards & honors

Outstanding Presentation Award (ACM SIGCHI Korea Chapter) April 2018

Virtual Training System Award (Ministry of Trade, Industry and Energy)
- Virtual Training for Reduced Gravity Environment Dec 2016

Qualcomm Innovation Award (Qualcomm)
- Terrain Searching with Fully Convolutional Neural Network May 2016

Global Ph.D. Fellowship (National Research Foundation of Korea) 2012 - 2013

Nexon Open Studio, **1st place** (Nexon)
- Virtual Economy: Correlation of Estate, Stock and Labor Market — Oct 2010

Game Developing Competition, **1st place** (Nexon)
- The Game of Risk: Game Theories in Online Game Economy — May 2010

Game Developing Competition, **1st place** (Nexon)
- Mazer: Creating a Maze — May 2009

National Science & Tech. **Scholarship** (Korea Student Aid Foundation) 2008 - 2011

Advising & Mentoring

Geonsun Lee September 2017 - August 2020
University of Maryland, Ph.D. student

Yeram Sim March 2014 - August 2016
Nexon Korea, Game programmer

Teaching

Department of Software Convergence, Kyung Hee University 2021-present
- Game Engine Basics (Unity, Unreal)
- Game Engineering
- Game Player Experience Design
- Game Graphics Programming (OpenGL, DirectX, Vulkan, CUDA)
- Design Thinking
- Game Engineering

Software, Media and Industrial Engineering, Kangwon National University Fall 2019
- Basics of C++ Language
- Digital Logic Design

Academic activities

Reviewer
- ACM SIGGRAPH
- ACM User Interface Software and Technology Symposium (UIST)
- Computer Graphics Forum
- EuroHaptics Conference
- IEEE Conference on Virtual Reality and 3D User Interfaces (IEEE VR)
- IEEE Transactions on Visualization and Computer Graphics (TVCG)
- Interactive, Mobile, Wearable and Ubiquitous Technologies
- The International Journal of Digital Earth
- The Visual Computer: International Journal of Computer Graphics

Conference Committee
- Organizing Committee Member (KCGS 2025)
- Organizing Committee Member (KCGS 2024)
- Operational Committee Member (KCGS 2023)

Talks

Mar 2025, French Institute for Research in Computer Science and Automation (INRIA)