

HANEOL (SKY) KIM

Senior Software Engineer, Unity Technologies

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Skill Overview

Experiences in game engine, healthcare, and AI/ML
Excellence in problem solving and rapid prototyping
Strong research interests in AI, XR, accessibility for people with disability

Education

Sogang University

Ph.D. Student in Graduate School of Metaverse

Seoul, Korea

2022 – present

Gwangju Institute of Science and Technology

M.S. in Graduate School of Mechanical Engineering

Distributed Control and Autonomous Systems Laboratory (DCAS Lab)

Thesis: Multiagent Cooperative Reinforcement Learning: Convergence Proofs and Applications

Advisor: Professor Hyo-Sung Ahn (hyosung@gist.ac.kr)

Gwangju, Korea

2011

University of Seoul

B.S. in Electrical and Computer Engineering and Physics

Seoul, Korea

2009

Experience

Unity Technologies

Senior Software Engineer

Seoul, Korea

2022 – present

- Deliver expert consultation and strategic support to key clients in gaming and industrial sectors
- Spearhead technical expertise in Unity AI including Muse (GenAI), Sentis (Inference Engine), and ML-Agents (Reinforcement Learning Package)
- Conduct immersive training sessions on cutting-edge reinforcement learning and deep learning algorithms, with cross-industry applications
- Showcase Unity AI innovations through dynamic presentations at conferences, targeted marketing campaigns, and engaging YouTube content
- Excel in diagnosing, addressing, and resolving complex technical challenges for diverse user base

Samsung Healthcare

Senior Software Engineer

Seoul, Korea

2013 – 2022

- Doing state-of-the-art research related to medical image processing and digital healthcare
- Developed advanced 3D rendering algorithms such as direct volume rendering, physically based rendering, 3D segmentation and its visualization for Radiology and Obstetrics & Gynecology
- Proposed deep learning projects using object detection, semantic segmentation, and style transfer
- Proposed web-based application using image streaming and responsive web UI
- Developed Cortex M based embedded system, FFT signal processing algorithm, and device driver
- Developed UI automated testing tool, 3D data manipulation tool, and productivity tools in Python
- Reviewed regulatory affairs documentation for FDA510(k)
- Participated in clinical research with many hospitals and medical institutions
- US Patents: 4 Grant, 1 Application

Seoul National University

Seoul, Korea

Lead Software Engineer

2011 – 2012

- Developed programming and numeric computing platforms (CEMTool, CEMStudio)
- Developed a compiler and toolboxes compatible with MATLAB (CEMTool)
- Developed a GUI simulator of model-based control system like LabVIEW (CEMStudio)
- Proposed control system applications such as cloud-based CLI service and drone flight simulator
- Managed a development team and served as lead developer
- Advisor: Emeritus Professor Wook-Hyun Kwon (whkwon@snu.ac.kr)

Gwangju Institute of Science and Technology

Seoul, Korea

Researcher

2009 – 2011

Participated in a bio-insect project applying reinforcement learning algorithm for robot-insect interaction

Korea Institute of Science and Technology

Seoul, Korea

Intern

2005 – 2006

Designed the embedded system for phosphorescent detection

Hackathon

Team Leader and Software Engineer

- Professor Sean: RAG-based Lecture Review and Interaction System [\[Link\]](#) 2024
* *Grand Prize for Upstage LLM Project Competition by Sogang University*
- WheelingXR: XR-based wheelchair navigation training and real-time path planning idea 2024
* *Grand Prize for 2nd Metaverse Planning Competition by Sogang University*
- WheelingVR: VR-based wheelchair navigation training digital twin system 2023
* *Excellence Award for Assistive Device Idea Competition by National Rehabilitation Center (NRC)*
- Hawkeye: Sound visualization application for hearing-impaired people in AR glasses [\[Link\]](#) 2022
* *Minister of Science and ICT Award for XR Device Contents Hackathon*
- K-Wheely: Metaverse racing game set in a Korean city for wheelchair users 2022
* *Ministry of Culture, Sports and Tourism Top 3 Finalists for Metaverse Contents Contest*
- DotTalk: 3-point braille device supporting conversations for deaf-blind people [\[Link\]](#) 2022
* *Grand Prize for Assistive Technology Hackathon by National Rehabilitation Center (NRC)*
- MyWater: Health management app for water intake and excretion for urinary tract infection (UTI) 2021
* *Grand Prize for SCI Contents Competition at Korea Spinal Cord Injury Association (KSCIA)*
- regogym: Low-cost rehabilitation training service with BLE sensor and 3D exercise models [\[Link\]](#) 2020
* *Grand Prize for SCI Contents Competition at Korea Spinal Cord Injury Association (KSCIA)*
- BULO: Respiratory rehabilitation device for lung disease and pulmonary complications 2017
* *Winner of Creative Lab Competition by Samsung Electronics*
- NUKEYMED: CNN-based diagnostic tool for glaucoma detection using fundus images of the eye 2016
- Eye-Stick: Image-to-Speech system for legal blindness using CNN-based image classification model 2016
- VOMI: Virtual reality (VR) device and image processing application for low vision 2015

Websites

Rego Blog: Providing the leading articles for neurological diseases (spinal cord injury and stroke) [\[Link\]](#)

2020 – present

pcFRAME: Provided a tutorial for basic PC assembly service with self-made videos and a QnA service

2002 – 2012

Volunteering

Instructor of Human Rights and Disability (>60 lectures) for Employees and Students

2019 - present

Instructor of Science Camp for High School Students at GIST

2010

Skills

- Programming Language C, C++, C#, Python, MFC, Delphi
- 3D Rendering Unity, Blender, DirectX
- Firmware Programming ARM, AVR, CCS
- Microcontroller ARM Cortex M3 (CC2650)/M4 (TM4C123), AVR (ATmega16, ATmega128)
- Web Programming HTML5, JavaScript, PHP, NodeJS, Firebase
- Medical Image Processing OpenCV, VTK, ITK, dcmtk, ImageJ, DICOM, ITK-SNAP
- Simulation Tool MATLAB, Simulink, LabVIEW
- Artificial Intelligence PyTorch, Tensorflow, Keras, scikit-learn, onnx, ML-Agents, Sentic
- Operating System Windows, Ubuntu, Mac
- Languages Korean (Native), English (Professional working proficiency)

Publications

- **Haneol Kim**, Jonghwan Bae, Seonwoo Shin, Sanghun Park, "FashionRNA: Interactive Reimagination of Fashion Heritage", Proceedings of the IEEE/CVF International Conference on Computer Vision (ICCV) Workshops, 2025
- **Haneol Kim**, Jonghwan Bae, Wonyoung Jeong, Sanghun Park, "Design of Multimodal RAG Architecture for Intelligent Mixed Reality", Journal of the Korea Computer Graphics Society, Volume 31 Issue 3, 2025
- **Haneol Kim**, Hyojung Kim, "AI-Based Sound Cue Visualization Prototype Study for Improving Interaction Experience of Hearing-impaired in VR Environment", Journal of Virtual Convergence Research, 2025
- Ikjin Jang, **Haneol Kim**, Sunwoo Shin, "Exploring a generative retrieval-augmented system for veterinary medicine", FAVA, 2024
- Doory Kim, **Han-Eol Kim**, Chang-Hong Kim, "Enhancement of Long-Persistent Phosphorescence by Solid-State Reaction and Mixing of Spectrally Different Phosphors", ACS Omega, 2020
- Doory Kim, **Han-Eol Kim**, Chang-Hong Kim, "Development of a Blue Emitting Calcium-Aluminate Phosphor", PLoS ONE, 2016
- Doory Kim, **Han-Eol Kim**, Chang-Hong Kim, "Effect of Composition and Impurities on the Phosphorescence of Green-emitting Alkaline Earth Aluminate Phosphor", PLoS ONE, 2016
- **Han-Eol Kim**, Bong-hee Seo, Kwang-jin Kim, "CEMStudio: model-based simulation software for general-purpose signal processing", KMMS 2012, Seoul, Korea (**Best Award Paper*)
- **Han-Eol Kim**, Huy Bien, Kwang-Jin Kim, Jun-Ha Kim, "seaHERO: Modeling and Simulation Software for Seawater Desalination Plant", 4th International Desalination Workshop 2011, Jeju, Korea
- Young Wook Kwon, **Han-Eol Kim**, Wook-Hyun Kwon, Soohee Han, "Golf swing simulation using a double inverted pendulum", IEIE 2011, Jeju, Korea
- **Han-Eol Kim**, M.S. Thesis, "Multiagent Cooperative Reinforcement Learning: Convergence Proofs and Applications", School of Information and Mechatronics, Gwangju Institute of Science and Technology, 2011.
- **Han-Eol Kim**, Hyo-sung Ahn, "Convergence of Multiagent Q-Learning: Multi Action Replay Process Approach", IEEE ISIC 2010, Yokohama, Japan
- **Han-Eol Kim**, Hyo-sung Ahn, "Multi-agent cooperative reinforcement learning for heterogeneous mobile robots", ICMIT 2009, Gwangju, Korea
- **Han-Eol Kim**, Hyo-sung Ahn, "A review on Q-Learning convergence theorem", KACC 2009, Busan, Korea
- **Han-Eol Kim**, Doory Kim, Chang-Hong Kim, "Energy Transfer between Two Phosphorescent Phosphors", Korean Chemical Society 2007, Daegu, Korea

Patents

- **Han-Eol Kim**, Ultrasound diagnosis apparatus and method of displaying ultrasound image, December 10, 2019, US Patent 10499881, **Grant**.
- **Han-Eol Kim**, Ultrasound diagnosis apparatus and method of operating the same, October 15, 2019, US Patent 10441249, **Grant**.
- **Han-Eol Kim**, Dong-hoon Oh, Ultrasound diagnosis apparatus and method, September 10, 2019, US Patent 10405832, **Grant**.

- Dong-Yoon Park, **Han Eol Kim**, Dong Hoon Oh, Dong Gyu Hyun, Input apparatus and medical image apparatus comprising the same, January 29, 2019, US Patent 10191632, **Grant**
- Nam Du JEON, **Han Eol KIM**, Dong Gyu HYUN, WIRELESS ULTRASONIC PROBE AND ULTRASONIC APPARATUS HAVING THE SAME, July 14, 2016, US Patent 20160199028, Application
- **Han-Eol Kim**, Chang-hong Kim, Doory Kim, "Enhancement of long persistent phosphorescence by chemical mixing of two or more phosphorescent phosphors with spectral overlap", KR Patent 2020090009795, Application
- Doory Kim, Chang-hong Kim, **Han-Eol Kim**, "Fluorescent lamp with phosphorescent mold cover", KR Patent 10-2006-0071858, Application

Honors and Awards

2024	Grand Prize , 2nd Metaverse Planning Competition	Sogang University
2023	Excellence Award , Assistive Device Idea Competition	National Rehabilitation Center
2022	Minister's Award , XR Device Contents Contest	Minister of Science and ICT
2022	Top 3 Finalists , Metaverse Contents Contest	Ministry of Culture, Sports and Tourism
2022	Grand Prize , Assistive Technology Hackathon	National Rehabilitation Center
2022	Best Reviewer Certificate	Samsung Research
2021	Professional SW Certificate	Samsung Research
2020-2021	Grand Prize , SCI Contents Competition	Korea Spinal Cord Injury Association
2020	Instructor Certificate , Disability Awareness in the Workplace	Korea Employment Agency
2019	Instructor Certificate , Human Rights and Philanthropy	Center for Disability Rights
2017	Winner , Creative Lab (C-Lab) Competition	Samsung Electronics
2016	Best Idea , Samsung 7th BlueHack Hackathon	Samsung Healthcare
2015	Silver Medal , Creative Idea Contest	Samsung Healthcare
2014	Excellent Grade , Employee Evaluation	Samsung Healthcare
2011	Best Paper Award , Oral Session	Korea Multi-Media Society
2010	Bronze Medal , GIST Science Camp	GIST
2009 – 2011	Government Full Scholarship Program	GIST
2005 – 2008	Seoul Citizen and Academic Full Scholarship	University of Seoul

Presentations

2025	Break-out Session: Exploring the New Horizons of Multimodal RAG	AI Summit Seoul 2025
2025	Sogang Summer Workshop: Unity AI Vibe Coding	Sogang University
2025	Real-time AI Motion Tracking for XR and Mobile Devices	Unite Seoul 2025
2025	Sogang Winter Workshop: Creating AI Characters Using RAG Technology	Sogang University
2024	Sejong University - Dept of Fashion Design	Sejong University
2024	Hanyang University - Dept of Artificial Intelligence	Hanyang University
2024	On-Device AI Inference and Optimization Methods for XR/Mobile Devices	U/Day Industry 2024
2024	Hands-on: Unity Sentis from Scratch	U/Day Seoul 2024
2024	Presentation: Unity Sentis - Detailed Explanation and Tutorial for Game Contents	U/Day Seoul 2024
2024	Clip: Explore Examples of AI Content Creatable with Sentis	Unity YouTube Channel
2024	Employee Training: Creating Unity Assets with GenAI	Samsung Electronics
2024	Sogang Summer Workshop: Creating AI NPC	Sogang University
2024	Sogang Winter Workshop: Creating Unity Assets with GenAI	Sogang University

Press Release

2025	Interview: Life is fine-tuning [Link]	KIRD Youtube
2023	Unity's official LinkedIn account: Sky Kim's Day in the Life [Link]	Unity Official Account
2022	Introduce Unity Korea Engineer, Sky Kim [Link]	Maeil Business Newspaper