

# 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](mailto: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](mailto: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 (>50 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, Sentis
- Operating System Windows, Ubuntu, Mac
- Languages Korean (Native), English (Professional working proficiency)

## Publications

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

## Presentations

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

2024	Press Release: Unity's 'U Day Seoul 2024' Succeeds, Featuring Latest Unity Techs <a href="#">[Link]</a> - “Sky Kim’s 'Unity Sentis' session was rated as the most satisfying at U/Day Seoul”	Various Newspapers
2023	Unity's official LinkedIn account: Sky Kim’s Day in the Life <a href="#">[Link]</a> - “A day in the life of a senior software engineer at Unity”	Unity Official Account
2022	Introduce Unity Korea Engineer, Sky Kim <a href="#">[Link]</a> - “I'll develop a platform supporting disability rehabilitation and independence”	Maeil Business Newspaper