

# 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

Gwangju, Korea

2011

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))

### 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

|   |  |                             |
|---|--|-----------------------------|
| <b>Seoul National University</b>  | Lead Software Engineer   | Seoul, Korea<br>2011 – 2012 |
|   | <ul style="list-style-type: none"> <li>Developed programming and numeric computing platforms (CEMTool, CEMStudio)</li> <li>Developed a compiler and toolboxes compatible with MATLAB (CEMTool)</li> <li>Developed a GUI simulator of model-based control system like LabVIEW (CEMStudio)</li> <li>Proposed control system applications such as cloud-based CLI service and drone flight simulator</li> <li>Managed a development team and served as lead developer</li> <li>Advisor: Emeritus Professor Wook-Hyun Kwon (<a href="mailto:whkwon@snu.ac.kr">whkwon@snu.ac.kr</a>)</li> </ul> |                             |
| <b>Gwangju Institute of Science and Technology</b>  | Researcher   | Seoul, Korea<br>2009 – 2011 |
|   | Participated in a bio-insect project applying reinforcement learning algorithm for robot-insect interaction  |                             |
| <b>Korea Institute of Science and Technology</b>  | Intern   | Seoul, Korea<br>2005 – 2006 |
|   | Designed the embedded system for phosphorescent detection  |                             |
| <b>Hackathon</b>  |  |                             |
| Team Leader and Software Engineer   |  |                             |
| <ul style="list-style-type: none"> <li>Professor Sean: RAG-based Lecture Review and Interaction System <a href="#">[Link]</a> <span style="float: right;">2024</span><br/> <i>* Grand Prize for Upstage LLM Project Competition by Sogang University</i></li> <li>WheelingXR: XR-based wheelchair navigation training and real-time path planning idea <span style="float: right;">2024</span><br/> <i>* Grand Prize for 2nd Metaverse Planning Competition by Sogang University</i></li> <li>WheelingVR: VR-based wheelchair navigation training digital twin system <span style="float: right;">2023</span><br/> <i>* Excellence Award for Assistive Device Idea Competition by National Rehabilitation Center (NRC)</i></li> <li>Hawkeye: Sound visualization application for hearing-impaired people in AR glasses <a href="#">[Link]</a> <span style="float: right;">2022</span><br/> <i>* Minister of Science and ICT Award for XR Device Contents Hackathon</i></li> <li>K-Wheely: Metaverse racing game set in a Korean city for wheelchair users <span style="float: right;">2022</span><br/> <i>* Ministry of Culture, Sports and Tourism Top 3 Finalists for Metaverse Contents Contest</i></li> <li>DotTalk: 3-point braille device supporting conversations for deaf-blind people <a href="#">[Link]</a> <span style="float: right;">2022</span><br/> <i>* Grand Prize for Assistive Technology Hackathon by National Rehabilitation Center (NRC)</i></li> <li>MyWater: Health management app for water intake and excretion for urinary tract infection (UTI) <span style="float: right;">2021</span><br/> <i>* Grand Prize for SCI Contents Competition at Korea Spinal Cord Injury Association (KSCIA)</i></li> <li>regogym: Low-cost rehabilitation training service with BLE sensor and 3D exercise models <a href="#">[Link]</a> <span style="float: right;">2020</span><br/> <i>* Grand Prize for SCI Contents Competition at Korea Spinal Cord Injury Association (KSCIA)</i></li> <li>BULO: Respiratory rehabilitation device for lung disease and pulmonary complications <span style="float: right;">2017</span><br/> <i>* Winner of Creative Lab Competition by Samsung Electronics</i></li> <li>NUKEYMED: CNN-based diagnostic tool for glaucoma detection using fundus images of the eye <span style="float: right;">2016</span></li> <li>Eye-Stick: Image-to-Speech system for legal blindness using CNN-based image classification model <span style="float: right;">2016</span></li> <li>VOMI: Virtual reality (VR) device and image processing application for low vision <span style="float: right;">2015</span></li> </ul> |  |                             |
| <b>Websites</b>   |  |                             |
| Rego Blog: Providing the leading articles for neurological diseases (spinal cord injury and stroke) <a href="#">[Link]</a>  |  | 2020 – present              |
| pcFRAME: Provided a tutorial for basic PC assembly service with self-made videos and a QnA service  |  | 2002 – 2012                 |
| <b>Volunteering</b>   |  |                             |
| 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, Sentis
- 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
- Ikkjin 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        | <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 | 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 [ <a href="#">Link</a> ]                               | KIRD Youtube             |
| 2023 | Unity's official LinkedIn account: Sky Kim's Day in the Life [ <a href="#">Link</a> ] | Unity Official Account   |
| 2022 | Introduce Unity Korea Engineer, Sky Kim [ <a href="#">Link</a> ]                      | Maeil Business Newspaper |