HANEOL (SKY) KIM

Senior Software Engineer, Unity Technologies

loenahmik@gmail.com | https://skykim.github.io | www.linkedin.com/in/awesomesky

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   Seoul, Korea
Ph.D. Student in Graduate School of Metaverse   2022 – present

Gwangju Institute of Science and Technology   Gwangju, Korea
M.S. in Graduate School of Mechanical Engineering   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)

University of Seoul   Seoul, Korea
B.S. in Electrical and Computer Engineering and Physics   2009

Experience

Unity Technologies   Seoul, Korea
Senior Software Engineer   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   Seoul, Korea
Senior Software Engineer   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 (>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**, 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**