HANEOL SKY KIM

Senior Developer Support Engineer, Unity Technologies

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Skill Overview

Experiences in game engine, healthcare, and AI/ML
Proficient in various programming languages and algorithm
Excellence in problem solving and rapid prototyping
Strong interests in metaverse, digital twin, simulation, and robotics

Education

Gwangju Institute of Science and Technology — Gwangju, Korea
M.S. in 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 Developer Support Engineer — 2022 – present

- Providing in-depth consultation and supporting users for Unity simulations and games
- Technical expert in the use of Unity products: Unity Simulation, Computer Vision, and ML-Agents
- Implementing reinforcement learning algorithms for training ML-Agents
- Doing research on vision-based deep learning algorithms to be applied across industries
- Receiving, troubleshooting, responding to and resolving technically complex issues for users

Samsung Healthcare — Seoul, Korea
Senior Software Engineer — 2013 – 2022

- Doing the state-of-the-art research related to medical image processing and digital healthcare
- Developed advanced 3D rendering algorithm 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
- Lead a software team of 5 people
- Advisor: Emeritus Professor Wook-hyun Kwon (whkwon@snu.ac.kr)

Gwangju Institute of Science and Technology — Seoul, Korea
Researcher — 2009 – 2011
Participated in 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 — Seoul, Korea
Leader and Software Engineer

- VOMI: Virtual reality (VR) device and image processing application for low vision — 2015
- Eye-Stick: Image-to-Speech system for legal blindness using CNN-based image classification model — 2016
- NUKEYMED: CNN-based diagnostic tool for glaucoma detection using fundus images of the eye — 2016
- BULO: Respiratory rehabilitation device for lung disease and pulmonary complications — 2017
  ** Winner for Creative Lab Competition at Samsung Electronics*

Private Research

REGO Research — Korea

- Rego Blog: Providing the leading articles for neurological diseases (spinal cord injury and stroke) — 2019 – present
  https://regoresearch.github.io/
- regogym: Low-cost rehabilitation training service with BLE sensor and 3D exercise models — 2020
  http://regogym.com
  ** Grand Prize for SCI Contents Competition at Korea Spinal Cord Injury Association (KSCIA)* — 2021
- myWater: Health management app of water intake and excretion for urinary tract infection (UTI) — 2022
  https://play.google.com/store/apps/details?id=com.rego.mywater
  ** Grand Prize for SCI Contents Competition at Korea Spinal Cord Injury Association (KSCIA)*

pcFRAME — Korea

- Provided a tutorial for basic PC assembly service with self-made videos and a QnA service — 2002 – 2012

Publications

- 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

2022	**Best Reviewer Certificate**	Samsung Research
2021	**Professional SW Certificate**	Samsung Research
2021	**Grand Prize**, SCI Contents Competition	Korea Spinal Cord Injury Association
2020	**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
2017	**Very Good Grade**, Employee Evaluation	Samsung Healthcare
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	GIST
2005 – 2008	Seoul Citizen and Academic Full Scholarship	University of Seoul

Teaching Experience

2010	GIST Science Camp (Instructor)	Gwangju, Korea
2019 – present	Instructor of Human Rights and Disability	Seongnam, Korea
	>30 lectures for government offices, companies, schools, and the public applicants	

Skills

- Programming Language — C, C++, C#, Python, MFC, Delphi, Xamarin
- 3D Rendering — DirectX (HLSL), Unity
- Firmware Programming — ARM, AVR, CCS
- Microcontroller — ARM Cortex M3 (CC2650)/M4 (TM4C123), AVR (ATmega16, ATmega128)
- Web Programming — HTML5, JavaScript, PHP, NodeJS, VueJS, Firebase
- Medical Image Processing — OpenCV, VTK, ITK, dcmtk, ImageJ, DICOM, ITK-SNAP
- Simulation Tool — MATLAB, Simulink, LabVIEW
- Artificial Intelligence — PyTorch, scikit-learn, Unity ML-Agents
- Operating System — Windows, Linux, Mac