Juhyeon Kim

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EDUCATION

Dartmouth College — Hanover, New Hampshire
PhD in Computer Science — *Sep. 2022 – Current*

Seoul National University — Seoul, Korea
Master of Science in Electrical and Computer Engineering — *Sep. 2019 – Feb. 2022*

Seoul National University — Seoul, Korea
Bachelor of Science in Electrical and Computer Engineering (GPA 4.14/4.3, summa cum laude) — *Mar. 2014 – Aug. 2019*

Seoul Science High School for Gifted Students — Seoul, Korea
High school for talented students in science and mathematics — *Mar. 2011 – Feb. 2014*

RESEARCH INTERESTS

- Computer Graphics (especially physically-based rendering, real-time rendering and neural rendering)

- Reinforcement Learning

- 3D Computer Vision

PUBLICATIONS

[1] Changwoon Choi*, **Juhyeon Kim*** and Young Min Kim, "Fast and Lightweight Path Guiding Algorithm on GPU" arXiv, 2022 (*: equal contribution)

[2] **Juhyeon Kim** and Young Min Kim, "Fast and Lightweight Path Guiding Algorithm on GPU" Pacific Graphics Short Paper, 2021

[3] **Juhyeon Kim** and Kihyun Kim, "Optimizing Large-Scale Fleet Management on a Road Network using Multi-Agent Deep Reinforcement Learning with Graph Neural Network" IEEE International Conference on Intelligent Transportation Systems (ITSC), 2021

[4] **Juhyeon Kim** and Young Min Kim, "Novel View Synthesis With Skip Connections" IEEE International Conference on Image Processing (ICIP), 2020

EXPERIENCE

Industry-academic Cooperation Project — Mar. 2020 – June. 2022
Kohyoung Technology — *Seoul, Korea*
- Developed photo-realistic circuit board rendering application for automated optical inspection (AOI)
- Developing inter-reflection removal algorithm in phase shift profilometry

Undergraduate Research Intern — Jan. 2019 – Jul. 2019
Kakao Mobility — *Pangyo, Korea*
- Developed efficient taxi dispatching algorithm using multi-agent deep reinforcement learning
- After the internship, I personally further researched it and published the paper to ITSC

Teaching Assistant
Seoul National University — *Seoul, Korea*
- 2020, Spring : Graphics Programming
- 2019, Fall : Machine learning and optimization for 3D data

Personal Projects

Custom ray-tracing engine | *Python, OptiX*   Jan. 2021 – Present
- Personally developing a fast GPU ray-tracing engine written in Python

Micro game units control with RL | *Python, BWAPI* | Youtube   Jan. 2019 – Jul. 2019
- Developed 'StarCraft:Brood War' micro unit control using multi-agent reinforcement learning

ISLAND | *Java, OpenGL* | Youtube   Jan. 2017 – Dec. 2017
- Developed open world survival game 'ISLAND' from scratch without using any commercial game engine
- Developed real-time photo realistic rendering of large 3D natural scenes using OpenGL
- Wrote a paper from development experience and got best paper award in SNU Academic Festival for Undergraduate Students (title : 'Real-time photo-realistic rendering of large 3d natural scenes')

Personal blog about programming | link (Korean)   2016 – 2018
- Posted various articles about game and graphics programming during my undergraduate years
- Most featured : developing 'StarCraft:Brood War' using reverse engineering

Awards and honors

SNU Alumni Association President Award (for top honored graduate)   Seoul, Korea
Seoul National University   Aug. 2019

SNU Academic Festival for Undergraduate Students, best paper award   Seoul, Korea
Seoul National University   Dec. 2017

Presidential Science Scholarship (full tuition)   Seoul, Korea
Korea Student Aid Foundation   2014 – 2019

Relevant Coursework

Computer graphics / deep learning / reinforcement learning / stochastic control and optimization / compiler and operating system

Technical Skills

Languages: Python, Java, C/C++
APIs: OpenGL, OptiX, VisRTX, Mitsuba2