Juhyeon Kim

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Education

Dartmouth College — Hanover, New Hampshire
PhD Program 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

- Physically-based rendering
- Real-time rendering
- Neural rendering

Publications

Juhyeon Kim, Jack Cui, Wojciech Jarosz, Adithya Pediredla, "Geometric Antithetic Sampling for Rendering Spatiotemporally Modulated Light" SIGGRAPH Asia (conference track), 2026

Ramchander Rao Bhaskara*, Dhawal Sirikonda*, Omkar Vengurlekar*, **Juhyeon Kim**, Joseph Lazzaro, Suren Jayasuriya, Adithya Pediredla "SDR-ToF: Million Optical Depth Samples per Second Using Software-Defined Radio" SIGGRAPH Asia (journal track), 2026

Juhyeon Kim, Wojciech Jarosz, Adithya Pediredla, "ToF ReSTIR: Time-of-Flight Rendering with Spatio-temporal Reservoir Resampling" SIGGRAPH (journal track), 2026

Juhyeon Kim, Wojciech Jarosz, Adithya Pediredla, "Difference-aware Filtering for Event Camera Simulation" EGSR (CGF track), 2026

Jack Cui, **Juhyeon Kim**, Wojciech Jarosz, Adithya Pediredla, "Light-Cone Shell Queries for Scalable Time-Gated Rendering" EGSR (CGF track), 2026

Juhyeon Kim, Craig Benko, Magnus Wrenninge, Ryusuke Villemin, Zeb Barber, Wojciech Jarosz, Adithya Pediredla, "A Monte Carlo Rendering Framework for Simulating Optical Heterodyne Detection" SIGGRAPH (journal track, honorable mention), 2025

Ruomai Yang, **Juhyeon Kim**, Adithya Pediredla, Wojciech Jarosz "A wave-optics BSDF for correlated scatterers" Computer Graphics Forum, Eurographics Symposium on Rendering (EGSR), 2025

Juhyeon Kim, Joshua Multhaup, Mahima Sneha, Adithya Pediredla, "Efficient Time Sampling Strategy for Transient Absorption Spectroscopy" ICCP, 2024

Juhyeon Kim, Wojciech Jarosz, Ioannis Gkioulekas, Adithya Pediredla, "Doppler Time-of-Flight Rendering" SIGGRAPH Asia (journal track), 2023

Changwoon Choi*, **Juhyeon Kim***, Young Min Kim, "IBL-NeRF: Image-Based Lighting Formulation of Neural Radiance Fields" Computer Graphics Forum, Proceedings of Pacific Graphics, 2023 (*: equal contribution)

Albert Reed, **Juhyeon Kim**, Thomas Blanford, Adithya Pediredla, Daniel C. Brown, Suren Jayasuriya, "Neural Volumetric Reconstruction for Coherent Synthetic Aperture Sonar" SIGGRAPH (journal track), 2023

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

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

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

Open-Source Software

FalcorComp | *GPU Monte Carlo Rendering for Computational Imaging* | GitHub | Documentation 2026

- Developed and maintain an open-source, performance-oriented rendering toolkit built on NVIDIA Falcor, using GPU hardware ray tracing for interactive and offline computational imaging simulation.
- Implemented Monte Carlo renderers for transient/time-gated ToF, structured light, Doppler/FMCW and optical heterodyne sensing, and event cameras.
- Integrated research algorithms including ReSTIR-based path reuse, geometric antithetic sampling, and difference-aware filtering; distributed as a documented Python package.

Experience

Summer Internship June. 2026 – Sep. 2026
Aurora Innovation *Mountain View, USA*

- Conducted research and development on lidar volume scattering.

Summer Internship June. 2024 – Sep. 2024
Intel Graphics Lab *Seattle, USA*

- Conducted research on low-sample adaptive-sampling.

Summer Internship June. 2022 – Aug. 2022
Pearl Abyss *Seoul, Korea*

- Implemented real time path tracer using recent techniques such as ReSTIR and ReBLUR

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, Dartmouth College

- 2024, Fall : Rendering Algorithm
- 2023, Winter : Computer Graphics
- 2023, Spring : Computer Vision
- 2020, Spring : Graphics Programming
- 2019, Fall : Machine learning and optimization for 3D data

Awards and honors

Neukom Research Prizes (2nd Prize) Hanover, US
Dartmouth College *Jun. 2025*

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, Mitsuba3, Falcor