Jaesung Park

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Senior Software Engineer (Ph.D.) specializing in GPU systems, real-time rendering, and performance-critical C++ infrastructure. Architect and optimize GPU-accelerated systems for 3D rendering and ML workloads using Vulkan and CUDA. Former IOI Gold Medalist and ICPC World Finalist.

Work Experience

- **Presto Labs** – Quantitative Researcher — Sep 2023 – Present
  - ◇ Designed and maintained low-latency C++ infrastructure for research and production deployment.
  - ◇ Improved simulation throughput by up to 10x compared to legacy systems.
- **NAVER LABS** – Research Software Engineer — Feb 2022 – Sep 2023
  - ◇ Implemented high-performance rendering pipelines for massive point clouds in OpenGL applications.
  - ◇ Designed Vulkan-based real-time Neural Radiance Fields (NeRF) rendering engine with GPU shader pipeline.
  - ◇ Implemented WebGL-based 3D visualization for real estate virtual tours (contributed to KR patent).
- **Cupix** – Research Software Engineer — Jul 2020 – Feb 2022
  - ◇ Developed compression algorithms for large-scale unstructured point clouds.
  - ◇ Implemented real-time WebGL rendering systems for interactive 3D visualization in browser environments.
  - ◇ Contributed to indoor 360° panorama reconstruction and photogrammetry systems.
- **Moloco** – Software Engineer Intern — May 2017 – Aug 2017
  - ◇ Performed data analysis.
  - ◇ Contributed to data infrastructure engineering.

Technical Skills

- **Languages**: C++17/20, Python, JavaScript, TypeScript
- **GPU / Graphics**: CUDA, Vulkan, OpenGL, WebGPU, WebGL
- **Systems**: Performance optimization, low-latency systems, parallel computing
- **ML / Vision**: Neural Radiance Fields, Gaussian Splatting

Education

- **Ph.D.** in Computer Science — Sep 2015 – May 2020
  University of North Carolina at Chapel Hill — USA
  - ◇ Advisor: Prof. Dinesh Manocha
  - ◇ Research: Robot motion planning, collision detection, ML-based human motion prediction.
- **B.S.**, in Computer Science, Minor in Mathematics — Mar 2011 – Feb 2015
  Seoul National University — South Korea
  - ◇ GPA: 4.06/4.30 (cumulative), 4.22/4.30 (major), Summa Cum Laude

Selected Research

- *I-Planner: Intention-Aware Motion Planning Using Learning-Based Human Motion Prediction*, IJRR, 2019.
- *HMPO: Human Motion Prediction in Occluded Environments for Safe Motion Planning*, RSS, 2020.
- *Efficient Probabilistic Collision Detection for Non-Gaussian Noise Distributions*, IEEE RA-L, 2020.

Awards

- **ACM-ICPC World Finals**: 36th place (2012), 51st place (2015)
- **ACM-ICPC Daejeon Regional**: 1st place (2011, 2014)
- **International Olympiad in Informatics (IOI)**: Gold Medal (2009), Silver Medal (2008)

Personal Projects

- `vulkan_radix_sort`: High-performance Vulkan-based GPU radix sort implementation.
  - ◇ Achieved performance competitive with CUDA CUB library.
- `vkgs`: Vulkan-based Gaussian Splatting viewer optimized for real-time performance.
  - ◇ Achieved 2× speedup over the original viewer through GPU pipeline restructuring and memory optimization.
  - ◇ Cited by Meta's `vkraygs` research project and referenced by NVIDIA's Vulkan demo repository `vk_gaussian_splatting`.
- `splatstream`: Vulkan-based Gaussian Splatting viewer with Python bindings for research.