

Qihao He ✉ phyqh@tamu.edu | ☎ (979)3210988 | 🌐 [phyqh](#)

Education

Texas A&M University, College Station Aug. 2023 – Ongoing
Master of Science in Computer Science, GPA: 4.0/4.0

The Hong Kong University of Science and Technology Sep. 2019 – Jun. 2023
B. Sc. in Data Science and Technology & Computer Science (Double-Major)

- **Graduated with First Class Honors**, GPA: 3.65/4.30
- [2022/23 CSE Best Final Year Project: Professor Samuel Chanson Best FYP Award](#)

Skills

- **Programming Languages:** Python, C++, CUDA, Java, Scala
- **Tech Skills:** PyTorch, Mitsuba Renderer, OptiX, OpenGL, TensorFlow

Internship Experience

[Aurora](#) C++ Jun. 2024 – Aug. 2024
Software Engineer Intern, Synthetic World and Sensor Simulation Team Mountain View, CA, USA
An accelerated light sampling algorithm to enhance sensor simulation efficiency

- Accelerated the rendering process for sensor simulation, crucial for efficiently generating edge cases to improve the robustness of autonomous driving systems.
- Implemented [Stochastic Lightcuts](#), [organized in spatial cells](#) within a Bounding Volume Hierarchy, reducing rendering time by 55% in many-light scenarios, especially beneficial in night scene simulations.

[Capmi Technology](#) JavaScript, TypeScript Jun. 2022 – Aug. 2022
Software Developer Intern Sha Tin, HKSAR
Two core features to enhance expressiveness of an Inertial Motion Capture product.

- Improved an Inertial Measurement Unit Sensor-to-Body Calibration Method for arbitrary orientation.
- Developed a Foot Rooted Kinematic Model algorithm for model translation on level ground and a Kalman Filter for reconstructing complex dynamic human motions including jumping, running, etc.

Research Experience

Neural Path Guiding C++, Python, CUDA, Pytorch, OptiX, Mitsuba Sep. 2023 – Ongoing
Aggie Graphics Group, advised by Professor Nima Kalantari College Station, TX, USA
A neural formulation to encode target distributions for path guiding algorithms.

- Ported the [Neural Parametric Mixtures for Path Guiding](#) from the original C++ implementation (using OptiX and tiny-cuda-nn) to Python, utilizing Mitsuba3, tiny-cuda-nn, and Pytorch.
- Implemented RealNVP in CUDA C++, a core component of [Neural Importance Sampling](#).

Projects

Real-time Vacancy Detection System (FYP) 🌐 Python, PyTorch Sep. 2022 – May 2023
• Detecting occupancy status of 12+ parking spaces using one fisheye-camera in real-time.
• Accuracy more than 90% with pedestrian related noise filtering algorithm.

Graphics Projects 🌐 C++, OpenGL, WebGL2 Sep. 2022 – Dec. 2022
• **Geometry:** Implemented Laplacian smoothing methods and Laplacian mesh editing technique.
• **Rendering:** Implemented rendering of volumetric cloud using fractal noise and Ray Marching.

Game Project – Pixel Fantasy 🌐 C++, OpenGL Feb. 2022 – May 2022
• An OpenGL-based game featuring a 3D ARPG with 2D Sprites without dependence on game engine.