

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

Education

Texas A&M University, College Station

Aug. 2023 – May. 2025 (Expected)

Master of Science in Computer Science, CGA: 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**, CGA: 3.65/4.30
- [2022/23 CSE Best Final Year Project: Professor Samuel Chanson Best FYP Award](#)

Skills

- **Programming Languages:** C++, Python, Java, CUDA, Scala, JavaScript, TypeScript, SQL
- **Tech Skills:** PyTorch, OpenGL, Mitsuba Renderer, OptiX, TensorFlow, MongoDB, Redis, React

Internship Experience

Capmi Technology, Ltd. *JavaScript, TypeScript*

Jun. 2022 – Aug. 2022

Software Developer Intern

Sha Tin, HKSAR

An Inertial Motion Capture product where I led the development of two core features.

- Implemented an Inertial Measurement Unit (IMU) Sensor-to-Body Calibration Method which enables users to wear the sensor at arbitrary orientations.
- Developed a Foot Rooted Kinematic Model (FRKM) algorithm to support model translation on level ground and a *Kalman* Filter to reconstruct 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 official [Neural Parametric Mixtures for Path Guiding](#) implementation from C++ and CUDA (with OptiX) to Python, using the Mitsuba3 renderer, tiny-cuda-nn, and Pytorch frameworks.
- Implemented RealNVP in CUDA (existing public implementations are mostly in Python), currently working on using it to do path guiding as described in [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% and adopted several methods to overcome noise incurred by pedestrians passing by the parking spaces.

Graphics Projects (Postgraduate) 🌐 *C++, OpenGL, WebGL2*

Sep. 2022 – Dec. 2022

- **Geometry:** Implemented explicit and implicit Laplacian smoothing methods and Laplacian mesh editing technique to deform mesh surface properly considering mesh geometry and topology.
- **Rendering:** Implemented rendering of volumetric cloud using fractal noise and Ray Marching.

Game Project – Pixel Fantasy 🌐 *C++, OpenGL*

Feb. 2022 – May 2022

- An indie game featuring a 3D ARPG with 2D Sprites without dependency on game engines.
- Set up a standard programmable OpenGL rendering pipeline and incorporate in more advanced graphical effects, including pixelation of characters, shadow mapping, Depth of Field, *etc.*
- Character control, custom camera that focuses on character, and a powerful AI enemy.