Shaoxuan Yin

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Education

- **Linköping University** — Linköping, Sweden
  Master of Science in Computer Science — *Sep 2023 - Jun 2025*

  Computer Graphics and AI

- **Beijing Information Science and Technology University** — Beijing, China
  Bachelor of Engineering in Computer Science and Technology — *Sep 2019 - Jun 2023*

Summer Job Experience

- **GienTech Technology Co., Ltd.** — Beijing, China
  Software Engineer Intern — *July 2021 - August 2021*
  - **WeChat Mini Program for Online Farmer's Market**: Developed an online shopping platform for farmers to sell products, handling thousands of active daily users. Implemented microservices using Spring Cloud and optimized database queries.
- **Beijing Guoyao Xintiandi Information Technology Co., Ltd.** — Beijing, China
  C++ Development Engineer Intern — *August 2022 - September 2022*
  - **3D Geographic Visualization Software**: Implemented users interfaces and part of an interactive 3D terrain rendering system using Qt framework and the OpenGL module.
  - **Network Communication Module**: Participated a custom network protocol development based on socket communication that reduced data transfer overhead, enhancing real-time capabilities.

Projects

- **Robotics - A martial arts arena fighting wheeled robot (STM32, C, Team Project, 2019)**: Competition oriented. The robot was able to avoid obstacles in the arena, attack enemy robots, and push them off the fighting stage automatically. Won the third prize in the 2019 China Robotics Cup. As the leader, I did C programming and structure design to help teammates assemble hardware.
- **Analysis of skiing action based on OpenPose (STGCN, OpenPose, Python, Team Project, 2021)**: Research oriented. A real-time skiing movement classifier model. Skiing videos as input and the outcome display with almost 80% accuracy. It is based on two frameworks: OpenPose, to acquire human skeleton coordinates on each frame of videos, and STGCN, to extract features from input coordinates. Published an academic paper with team members. My teammates helped finish the essay and process the dataset, and I accomplished the remaining work
- **Water Simulation Based on OpenGL (SPH Algorithm, CUDA, OpenGL, C++, Bachelor Thesis, 2023)**: Implemented SPH algorithm to simulate water particles and OpenGL to render water particles in real-time. The scene is cubic-like water free falls inside a cuboid container. The user controls a free view of the camera to observe from any position or angle in the world.
- **Retro Vault(Unity, C#, Team Project, 2023)**: A 2D platform puzzle game built based on Unity engine. Implemented character logic, animation and infrastructures of levels.
- **Paintbrush Magic(Gradio, Flask, Python, Three.js, Team Project, Jan 2024∼May 2024)**: A website connects AI art with physical products like hoodies, canvas, and posters. Using OpenAI API to generate images and render them on the 3D products as texture swapping. Manufacture corresponding products to users as they order. Suspended due to the lack of funding.
- **Monte-Carlo Ray Tracer (C++, Sep 2024 ∼ Present)**: Currently developing a Monte-Carlo Ray Tracer for advanced global illumination, implementing ray tracing across various materials, integrating hemispherical calculations for light-surface interactions, and applying **photon mapping** to achieve realistic complex lighting. Composing diverse scene geometries and employing physically-based rendering for increased photorealism.

Skills Summary

- **Programming Language**: **C++**, Python, C, Java, Javascript, Shell
- **Frameworks**: OpenGL, Android, Qt, CUDA, Three.js
- **Game engines**: Unreal Engine 5.4, Unity
- **Others**: CMake, Docker, Nginx