Jingqiao Xiao

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Education

BASc **University of Toronto**, Electrical Engineering — Sept 2021 – Dec 2025

- **Coursework:** Digital System Design, Operating Systems, FPGA, Embedded Systems, VLSI Technology, Machine Learning, Database Systems

Experience

High-Performance Computing Centre Stuttgart (HLRS), Student Researcher — Stuttgart, Germany, June 2023 – Aug 2023

- Improved the rendering performance of a large-scale 3D city model (Tallinn Old Town) using C++ and Shell scripting in a Linux environment.
- Merged material textures into sprite sheets using bin-packing optimization, standardized material formats, and updated coordinate systems to streamline open data rendering pipelines.
- Conducted comparative visualization and debugging in an immersive cube-shaped projection room, achieving a 50%+ frame rate improvement (14 fps → 21 fps).
- **Tools:** C++, Shell Script, Git, OpenGL, Linux

Projects

AXI-based Spiking Neural Network Interface (FPGA Design) — Jan 2025 – Apr 2025

- Implemented a hardware-accelerated spiking neural network on FPGA with VGA visualization, achieving 92% classification accuracy for motor functions using a 56-channel neural dataset.
- Designed VGA module on Nexys 4 DDR FPGA for real-time display of neuron spike out and render predictions at 60Hz on a 640×480 screen
- Tools Used: Verilog, Xilinx Vivado, Nexys 4 DDR, Git

Robot Gymnastics System — Sept 2024 – Mar 2025

- Simulated two-link robotic gymnast using MATLAB and designed PD/VNHC control algorithms.
- Developed a VNHC-based control system for a two-link gymnast robot, achieving stable full-bar revolution via Arduino and optical encoder feedback.
- Tools: MATLAB, Simulink, Arduino, SolidWorks, Optical Encoder

Viva Max Map – GIS Tool — Jan 2023 – Apr 2023

- Built a Linux GUI using C++ to render OpenStreetMap data
- Achieved 95% draw-time reduction; implemented multithreaded A*/Dijkstra/Greedy/Opt-2 routing algorithms
- Tools: C++, Linux, Parallel Programming, Git

Technologies

Languages: C, C++, Python, Verilog, Bash, MATLAB, SQL, Java

Tools & Platforms: Linux, QEMU (basic), Intel Quartus, Vivado, Git, OpenGL, ModelSim

Embedded Systems: STM32, Arduino, DE1-SoC, Nexys 4 DDR, UART, GPIO, Interrupt