Ziyu (Lucy) Qu

778-681-9477 | lucy.qu@mail.utoronto.ca | linkedin.com/in/ziyu-qu/

Education

University of Toronto Toronto, ON

BASc in Computer Engineering, minor in AI *Expected Graduation April 2025*

- **Relevant Courses**: Introduction to Databases, Applied Fundamentals of Deep Learning, Digital Electronics, Computer Architecture, Operating Systems

Experience

Intel May 2023 – Aug 2024

Software Engineer Intern - IP Solutions Engineering Team *Toronto, ON*

- Reviewed IP architecture to identify any existing gaps, ensuring optimal performance and functionality
- Owned IP block design and RTL development to interface with external IPs using standard protocols like **AVMM** and **AXI4**
- Integrated external IPs for **Quartus** compilation and created corresponding models for fast simulation saving **hours** of simulation time
- Established local **SystemVerilog** test environment to investigate in IP performance and functionality, developed regression and coverage scripts for comprehensive execution of test cases, and identified coverage gaps to ensure **100% code coverage** with exclusions
- Developed **SystemC Functional Models** for IP components and integrated them into the testing environment for comprehensive validation and evaluation, which significantly **improved efficiency** of IP development
- Developed customized **UVM testbenches** before IP delivers to customer, comprehensively grasping the design objectives and devising relevant **Test Plans**
- Identified **Timing and Clock Domain Crossing** issues during compilation and monitored hardware testing status of design until IP successfully delivered

Technical Skills

Languages: C, C++, SystemC, Verilog/SystemVerilog, Assembly, Python, SQL
Frameworks and Tools: Intel Quartus Prime, Universal Verification Methodology (UVM), Synopsys VCS, Synopsys SpyGlass, ModelSim, Git/Github

Projects

Deep Learning Handwritten Math Scanner Feb. 2023 – Apr. 2023

PyTorch

- Researched on **Convolutional Recurrent Neural Networks (CRNN)** architecture and the Connectionist Temporal Classification (CTC) loss function to investigate potential deep learning models for the project
- Developed a baseline model architecture incorporating **Convolutional Neural Network (CNN)** layers followed by **Gated Recurrent Unit (GRU)** layers resulting in **85%** accuracy
- Developed the primary **deep learning model architecture** featuring Convolutional Neural Network (CNN) layers followed by **Transformers** resulting in **98%** accuracy
- Enhanced model performance by integrating state-of-the-art image recognition models for initial data processing, resulting in improved efficiency and accuracy
- Trained and fine-tuned both models extensively to achieve peak performance tailored to their respective architectures, ensuring optimal results for the project's objectives

Animation Game: Moving Out Mar. 2022

C, DE1-SoC board

- Programmed the DE1-SoC board to respond to interrupts generated by a PS2 keyboard and display corresponding animations on a VGA display
- Incorporated data structures enabling player interaction with movable objects and barriers within the game environment
- Developed algorithms to efficiently manage animation loops and facilitate game restarts, enhancing the overall gaming experience