XINGYU (TOM) WANG

For application of PUS/Wesbrook Awards

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EXPERIENCE

Student Research Asistant

UBC

Aprl 2024 – Ongoing Vancouver, BC

- Aim: Investigate the applicability of the Learned Relaxed Belady (LRB) machine-learning model for cache and page pre-fetching
- Methods: Collect traces with Intel Pin tool and fltrace, analyze and transform traces acoording to prior work, train and evaluate with LSTM and Transformer models
- Progress: Tuned and trained LSTM and Transformer models on the traces, compared with the state-of-the-art heuristic algorithm (LEAP), beats LEAP in most cases in SPEC2017. Transitioning to more memory-intensive workloads and larger traces like GAP.
- Supervision under: Shaurya Patel, Prof. Alexandra Fedorova.

PROJECTS

Microsystem Design with Microprocessor

Jan 2024 - April 2024

- Build **memory, data bus, various I/O** around a M68K CPU on FPGA. Interact with CPU using embedded C programming
- Implemented components include **DRAM controller, Cache Controller, SPI, Canbus, I2C, ADC/DAC**, and **Simple RTOS** usage with multi-threading and priority interrupts.
- Integrate the above components with VGA and Voice modules, and map addresses accordingly both in RTL design and C programming to produce a Tetris game with the M68K CPU

ECC Performance Analysis on FPGA

Mar 2024 – April 2024

- RTL design of simple decoder and encoder for both Hamming code and LDPC code on FPGA.
- Analyze and compare performance on decode/encode cycle, combinational logic length, maximal frequency, gate usage, efficiency, and ease of use on DE1-SOC FPGA board.

IoT: Client and Server interaction

Nov 2023 – Dec 2023

- Summon multiple processes/threads to mimic client-server behaviours. Send packets between multiple clients and servers through the internet and process requests concurrently while maintaining coherence.
- **Concurrency, multi-threading**, software development, debugging, collaboration and teamwork.

QUALIFICATIONS

- Registered in 24 credits this winter session
- Expecting to graduate in Aug 2025

AWARDS

NSERC Awards
Natrual Sciences and Engineering Research Council of Canada Undergraduate Student Research Award (USRA) for May 2024 - August 2024

Dean's Honors List
Through out the academic journey in UBC

EDUCATION

BASC. in Computer Engineering

University of British Columbia

Sept 2021 – Aug 2025

CGPA: 87%
3-level courses and above: 89%
Course highlight:

- Computer Architecture, Digital and Microsystem design, Computing System, VLSI
- Software Development, Data Structures and Algorithms, Operating Systems
- Machine Learning, Error Control Coding, Abstract Math

REFEREES

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