YUE FEI

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RESEARCH INTEREST

Strong passion in Communication System and Signal Processing along with the application of Machine learning.

EDUCATION

4th Elec. & Comp. Eng. Student at the University of Toronto — Sep. 2017 – Present

< CGPA: 3.39 >

PROFESSIONAL EXPERIENCE

Research Assistant – Part-time — Jul. 2021 – Sep. 2021

Wireless and Internet Research Laboratory (WIRLab) at the University of Toronto, Toronto, Canada

- Conducted research on RNN-based Transformer model, Attention mechanism and the Visualization of Embedding through training for natural language processing. To explore its possible efficiency and utilizations in activity recognition using WiFi technology.

Digital Verification Engineer Intern — May 2020 – Jun. 2021

AlphaWave IP, Toronto, Canada

- Worked with a team of experienced engineers. Implemented a variety of UVM verification plans to get familiarized with different aspects inside a SerDes. Design, i.e. clocking structure, datapath, and SRAM for firmware loading. Conducted research and improved the automation testing (CI/CD) tool to serve the increasing demands for automated regressions better as the company scales.

SCHOOL PROJECT

ECE552 Computer Architecture (all done in a team of two) — Sep. 2021 – Dec. 2021

- Developed perceptron-based branch predictor, ranking 5th regarding speed and accuracy.
- Implemented Tomasulo Algorithm for Dynamic Scheduling
- Developed Bouquet Prefetcher enhanced with global history buffer
- Implemented MSI-directory protocol on Cache Coherence

ECE417 Digital Communication — Sep. 2021 – Dec. 2021

- Simulated source coding (Entropy, Huffman Coding, Pulse-Code Modulation), pulse transmission, and detection (Gram-Schmidt procedure and orthogonal projections, Error-Correcting code—Hamming Code), with Julia language.

ECE 537 Random Processes — Sep. 2021 – Dec. 2021

- Simulated Gaussian Processes, Poisson Processes, Optimal Filters in MATLAB.

ECE462 Multimedia System — Jan. 2020 – May. 2020

- Developed Haar-Wavelet transform along with sequence motion vectors for motion estimation on processing short clips in MATLAB.

ECE342 Computer Hardware — Jan. 2020 – May. 2020

- Implemented independently booth multiplier, line-drawing algo., and pipelined CPU.
- Pipelined CPU: Implemented the logic of branch prediction and hazard detection.

ECE344 Operating System — Jan. 2020 – May. 2020

- Collaborated to implement OS161 Thread Synchronization, System Call and Virtual Memory.

ECE316 Computer Network — Jan. 2020 – May. 2020

- Independently developed a single-server-multiple-clients application simulating UDP and TCP/IP protocol with C language.

ECE243 Computer Systems Jan. 2019 – May. 2019

Interactive model of Earth revolution and rotation

- Implemented accurate pixel drawing to reflect Earth's tilt, day/night transition, relative incident angle of sunlight based on Earth revolution, and text indication. Developed user-controllable Earth's motion speed with instant response on screen.

ECE241 Digital Logics Sep. 2018 – Dec. 2018

Interactive game named "Cake Rain"

- Generated sequence of randomly colored cake pieces at random location
- Interaction between the program routine for caking dropping and user response from FPGA on-board key for cake catching.

ARDUINO ROBOTICS, HIGH SCHOOL Feb. 2017 – Jun. 2017

An intelligent toy named "Don't Touch Me".

- Independently developed the robot's capability for surrounding detections using ultra-sonic and reflective IR sensors, and motion control with servo motors to perform fights and evasions.

AWARDS

Edward S. Rogers Sr. Department Betz Entrance Scholarship Sep. 2017

Dean's Honour List 2017 Fall – 2018 Fall

ONLINE COURSES

Fundamentals of Wireless Communications - David Tse, UC Berkeley Dec. 2021 – present

MIT 6.451 – Principles of Communication System II Dec. 2021 – present

MIT 6.450 – Principles of Communication System Dec. 2020 – Jun. 2021

MIT S.081 – Operating System Engineering Dec. 2020 – Feb. 2021

Neural Network and Deep Learning Dec. 2020 – Jan. 2021

Andrew Ng – Coursera.com

Algorithms I Course May. 2019 – Aug. 2019

Princeton University – Coursera.com

Algorithms & Data Structure Course (Level 1) May. 2019 – Aug. 2019

Stanford University – Coursera.com