Joey Zhang

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Education

University of Toronto — Toronto, ON
Bachelor of Computer Engineering (CGPA 3.68) — *Sept. 2020 – April 2025*
Minor in Music Performance & Technology

Technical Skills

Languages: `C++,C, Python, HTML, CSS, Assembly`

Tools: Vim, Neovim, Perforce, Github, Gerrit, Buildbot, Bluehost, MATLAB, Simulink

OS: Linux(Ubuntoo, Mint, and Arch), macOS, Windows

Work Experience

AMD (Advanced Micro Devices) — May. 2023 – Aug. 2024
Software Development Engineer, Power Management Diagnostics — *Markham, ON*

- **Co-owner, AMD-IDS(Interactive Diagnostics Studio):** Designed and implemented a cross-platform GUI tool (**python, paramiko**) for automating and streamlining wide coverage diagnostic testing on Linux systems. Proposed the tool in company-wide Technology Showcase, April 2024, via submitted paper and poster board presentation.
- Contributed to the development and validation of next-generation graphics cards with a focus on power management diagnostics.
- Developed high-performance diagnostics tests using modern `C++`, optimizing with **STL** algorithms and compile-time computations for efficiency and scalability.
- Validated diagnostic tests for ASIC features across various environments, including pre-silicon (FPGA, SW **emulation**) and post-silicon (HW **silicon**, **platform**)
- Provided diagnostics support to engineering teams, troubleshooting and resolving complex ASIC, board, and firmware issues.
- Utilized `Git` and `Perforce` for version control, ensuring continuous integration and collaboration
- Contributed to the development of POC for a Retrieval-Augmented Generation (**RAG**) application to consolidate IP specific documentations that are stored on **Confluence** using **Python**, **LangChain**, and **Altassian API**.

UHN (University Health Network) — May. 2022 – Aug. 2022
Research Trainee — *Toronto, ON*

- Conducted research under the tutelage of KITE Director Dr. Milos Popovic on artificial speech synthesis techniques.
- Developed `MATLAB/SIMULINK` models for both voiced and unvoiced speech synthesis.
- Performed experiments to generate speech sounds using bone-conducting transducers.
- Designed, tested, and debugged circuitry for transducer applications.

Personal & Class Projects

Metronerm — July. 2024 – Aug. 2024
`C++`, Libao-Audio-Library

- Developed a lightweight, terminal-based metronome specifically designed for tech-savvy musicians.
- Utilized Libao, a cross-platform audio library, for initializing, programming, and outputting audio.
- Incorporated threading to ensure smooth audio playback and address latency issues caused by MP3 loading overhead.
- Implemented a `SIGINT` handler function to capture and manage `Ctrl+C` input.

Personal Website — Jan. 2024 – April. 2024
`HTML, CSS`, Bluehost

- Learned and practiced **HTML** and **CSS**, and experimented with the modern Front-End Framework **Bootrap**.
- Developed portfolio website documenting professional and personal interests.
- Website is hosted at: joeyzhang.ca/portfolio

Music Improvisation Unit (MIU) — Oct. 2022 – Dec. 2022
`Python`, DSP

- Developed a project inspired by a musician's ability to improvise over a set of chords.
- Simulates a musician's musical intuition for creating melodic lines.
- MIU is a project that affords melody extemporization through the application of Fast Fourier Transforms (FFTs), digital signal processing (DSP) theories, and melody generation algorithms.

ARM Piano Tiles Game — 2021
C, ARMv7, DE1-SOC v16.1

- Developed the rhythm game in **C** on CPULator using ARMv7 architecture.
- Prototyped gameplay on DE1-SOC FPGA.
- Utilized dedicated seven-segment displays, push-buttons, and LEDs for gameplay interactions.

Awards

Dean's Honour List 2020, 2021, 2022, 2023

- Awarded each year/term for students who achieve weighted term average of 79.5% or higher (3.5GPA)

VSO Werner & Helga Award 2018

- The Werner & Helga Award recognizes Surrey Secondary School music students who demonstrate excellence in music, leadership, and community involvement.
- Award News Article: 20 Surrey student musicians given new award from VSO

Extracurricular

Skule Stage Band Gold Sept. 2020 – Present

Tenor Saxophone Player

- Participated in weekly practices and seasonal performances, focusing on a repertoire of Jazz, Blues, Bebop, and Funk music.

Relevant Courses

Computer Architecture
Computer Programming in C++
Algorithms & Data Structures
Operating Systems
Multimedia Systems
Digital Systems
Control Systems
Sensory Communications
Computer Network I
Calculus I, II, III
Probability & Application

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