Kunal **Chandan**

University of Waterloo
B.A.Sc Honours Electrical & Computer Engineering

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Software

· KiCAD
· LTSpice/PySpice
· Cadence
· LayoutEditor
· Quartus Prime
· Linux

Languages

· Python
  · Numpy
  · Pandas
  · Scipy
  · Sympy
  · TensorFlow
  · Pytorch
· C++
· SQL
· Rust
  · nalgebra
  · Rayon
· MATLAB
· Go
· Verilog
· RISC-V
· Shell
· LaTeX

Lab Skills

· PCB Design
· Oscilliscope
· Network Analyzer
· Probe Station
· Wirebonder
· Diebonder
· Plasma Cleaner & Asher
· Dicing saw
· HMDS Oven
· Spincoater
· SEM
· X-Ray Spectroscopy

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Summary of Qualifications

· Multidisciplinary generalist electrical engineering skills specialist in software development at scale in data engineering with **Python** and performance critical development in **C++**
· Experienced electrical engineering skills with clean-room and hands-on electrical lab-work
· Strong electrical engineering foundation through coursework in semiconductor device physics, RF devices, computer architecture, control systems, and IC design

Experience

RESEARCH ELECTRICAL ENGINEER | University of Waterloo

Sept 2022 - Apr 2023 | Waterloo, ON
· Developed research plan for packaging of μLEDs onto TFT packplanes using indium electroplating
· Characterized results using **SEM** and **X-Ray Spectroscopy**,
· Simulation

Projects

BEAMFORMING HEARING AID PCB

· Designed 4 channel microphone array PCB in **KiCAD**, PCB does active analog bandpass filtering, differential amplification, and multichannel **ADC** over **SPI** to Raspberry Pi
· R-Pi does compression and sends audio over **Flask** server for further digital filtering and beamforming
· **Pytorch** to create quantized voice isolation model and minimize latency and maintain performance
· Used **multiprocessing**, **asyncio**, and **websockets** to maximize throughput and performance

PIPELINED RISC-V CORE

· Designed 5-stage pipelined **RISC-V** 32-bit core in **Verilog** using only synthesizable constructs
· Core synthesized on FPGA and successfully ran programs. Testbenches used to ensure cycle accuracy

RAY TRACING ENGINE

· Implemented 3D recursive path-tracing for arbitrary materials on basic geometric shapes
· Used **nalgebra** for arbitrary rotations & positions of camera & objects
· Parallel processing of ray-tracing using **rayon** yielding **~10X** performance speed-up

Education

UNIVERSITY OF WATERLOO

B.A.SC ELECTRICAL & COMPUTER ENGINEERING 23'

· Electronic devices, Semiconductor physics, Analog/Digital integrated circuits
· Analog/Digial/Multivariable control systems
· Radio frequency and microwave circuits

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