PASAN SANJULA PERERA

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EDUCATION

Sri Lanka Institute of Information Technology *2020 - Present*
Bachelor of Science in Engineering
Specializing in Electrical and Electronic Engineering
Expected Graduation: *March, 2024*

Ananda College, Colombo 10 2011 - 2019
G.C.E Advanced Level Examination
Physical Science (Combined Mathematics, Physics, Chemistry)

EXPERIENCE

Acceler Logic (pvt.) ltd. *November 2021- January 2022*
Software Development Intern *Full-time*
I worked with a team from USA, India and Sri Lanka, building a Hardware Accelerated Computing solution for an open source search engine software library. Developed a hardware model for a hash function using C/C++ and integrated with the existing Java codebase using JNI. Created an OpenCL kernel for the same function to execute on an FPGA using Xilinx Vitis SDK. Wrote Python scripts to automate extracting textual data from CSV and PDF files, reformatting and writing to JSON files.

Bot Labs *June 2021 - July 2021*
Research and Development Intern *Part-time*
I contributed to research and development of the core architecture of an upcoming product. Developed various proof-of-concepts using C/C++, JavaScript and WebAssembly with OpenGL.

TECHNICAL PROJECTS

Presenter Tracking Camera *February 2022 - June 2022*
I led a team of three designing and developing a low cost video camera for hybrid teaching with presenter movement detection, localization and tracking capability. I designed the system and software architecture for the project and done individual research and development on real time object detection and tracking using classical computer vision techniques and Kalman filters. Involved in developing a major part of the alpha software for the initial prototype written in Python. Peer reviewed and refactored the code written by other members.

VOLTOI - A voltmeter with a web interface *May 2022 - June 2022*
I led a group of two designing and prototyping a voltmeter with a web interface for an educational hybrid laboratory setup. I developed the firmware in C/C++ for the ESP32 development board using FreeRTOS to parallelize the tasks which reads the voltages from analog inputs and serves the data to a static HTML frontend using the WebSocket protocol, by following operating systems concepts CPU scheduling, and multiprocessing.

Sun Tracking Solar Panel *April 2022 - June 2022*
Our group designed and prototyped a double axis sun tracking solar panel using an MSP430 development board and servo motors. I developed the bare-metal firmware stack in C to read multiple ADC inputs and co-developed the firmware for the button mechanism designed to manually rotate the solar panel.

Autonomous Wall Following Robot *August 2021 - September 2021*

Our group designined and prototyped an autonomous wall following and obstacle avoidance robot using fuzzy control algorithm on a Microchip PIC microcontroller. I developed the Bare-metal firmware and software stack in C for the project including the control algorithm while using Hardware in the Loop conceps to test and optimize the algorithm.

BJT Audio Amplifier *August 2021 - September 2021*

Our group designed an audio amplifer using a 2N2222A Bipolar junction transistor. I designed the PCB layout for the circuit using Autodesk Eagle after initial simulations and prototyping using NI Multisim 14.

Car Park Management System *May 2021*

I designed and developed a car park management system in Java using only standard libraries and following fundamental Object Oriented design patterns. The program was developed as a console application with the ability to improve over time.

Queue Length Counter *May 2021*

I designed and simulated a digital circuit using only logic gates to count the occupied slots and to check the availability of slots in a queue where the number of slots is predefined. Used National Instruments Multisim 14 as the simulation environment.

Battle of the Maroons Live Score Application *November 2017 – March 2018*

Developed a cross platform mobile application along with the team using Angular, Ionic and Firebase in order to provide live updates of 89th Battle of the Maroons cricket encounter. I managed the project as the project coordinator and contributed to the design of the core architecture.

TECHNICAL SKILLS AND COMPETENCIES

Programming Languages	C/C++, Python, Java
Hardware Description Languages	Verilog, System Verilog, VHDL
Software Libraries/Frameworks	OpenCV, OpenCL, OpenGL, PyTorch
Software Tools	Matlab, Simulink, Proteus, Multisim, Eagle, Vivado
Operating Systems	Unix/Linux, MacOS, Windows, FreeRTOS
Hardware Platforms	MSP430, Microchip PIC, ESP32, AMD Xilinx, Intel