DININDU THILAKARATHNA

Computer Engineering Undergraduate

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WORK EXPERIENCE

Hardware Team Lead, CO-Founder

Tronicode Engineering (PVT) Ltd

2020 – Present | Sri Lanka

- Disinfection Chambers Electrical and control system (Diyathalawa base hospital)
- Drone control system project
- Gedarata Elavalu App (on PlayStore)

Teaching Assistant

University of Peradeniya

- CO321 - Embedded Systems
- CO224 - Computer Architecture
- Sessions on algorithmic programming, Hackers Club, University of Peradeniya

RESEARCH EXPERIENCE

Flexible Spiking Neuron Architecture Based On RISC-V Processing Elements

2022 – Present | University of Peradeniya

- Neuromorphic computing architecture to simulate spiking neurons based on RISC-V processor network on chip (Undergraduate Research Project)
- Verilog HDL Simulation
- Tested on Altera DE5-Net Stratix V GX FPGA

Cryptographic Research Internship

2022 – Present | Griffith University, Australia

- Implemented a Quantum safe cryptographic algorithm based on lattice cryptography
- C++

PROJECTS

Project Repositories - https://dinindu.me#projects

RV32IM Pipeline processor with caches and memory

2021 – 2022

- Designed n and tested a RV32IM 5 stage pipeline processor with verilog HDL. Designed an assembler to compile machine language code to RISC-V Architecture.
- Interrupt handling unit and random number generator was added to the RV32IM processor
- Technologies: Verilog
- Technologies: Computer Architecture
- *Project Page*

EDUCATION

BSc. Engineering(Hons) Computer Engineering

University of Peradeniya, Sri Lanka

Nov 2017 – March 2023

GPA 3.90/4.00

2nd of 60 Computer Engineering Students

G.C.E. Advanced Level Examination

Bandarawela Central Collage, Sri Lanka

2003 – 2016

District Rank - 10, Country Rank - 471
Z-Score: 2.0702 Physics (A),
Combined Mathematics (A), Chemistry (B)

SKILLS

Programming Languages

Python | c | c++ | Java | Dart | JavaScript

Numerical Computing

MATLAB | Octave | Numpy

Hardware Programming

AVR Programming | Verilog | Assembly

PCB Designing

Eagle | Altium

3D Modeling

Fusion360 | SolidWorks

Frameworks

Flutter | Android Studio | Django

Version Control

git

Oparating Systems

linux (Bash shell) | Mac | Windows

Database

MySQL) | MongoDB

PROJECTS

Obstacle robots for swarm robotic project

2020 – 2021

- Obstacle bot capable of positioning themselves without colliding with each other for the existing swarm robotic platform.
- *Technologies: Python, OpenCV, numpy, MQTT, JavaScript, GRPC*
- *Techniques: Image Processing, stochastic gradient descent, Encryption*

Crypto currency ticker site

2020 – 2021

- Cryptocurrency to fiat currency conversion sites with high refresh rates And analyzing trends real-time
- *Technologies: Python, MQTT, JavaScript, CSS, Web Sockets, Nginx, Python Django*
- *Techniques: Real-time web socket connections to clients for fast refresh rates*

Verilog Based CPU

2020

- Designing of a 32-bit CPU which supports simple instructions with caching.
- *Technologies: Verilog*
- *Techniques: Computer Architecture*

8-bit Computer

2020

- Design and build an 8-bit computer. This was designed in gate level and implemented as physical device
- *Technologies: Embedded system, Integrated circuits, Simulation*
- *Techniques: Computer Architecture*

Line Following robot using a camera feed and Machine Learning

2020

- A robot that can follow a line based on the camera feed. I have created a neural network from scratch and trained it with the data set gathered by driving the robot
- *Technologies: Raspberry Pi, Image Processing, Custom build robot*
- *Techniques: Custom Neural Network, OpenCV*

Design and installation of fully automated system for Disinfection Chambers for Diyathalawa Base Hospital, Bandarawela Hospital

2020

Technologies: C++ Atmel Microcontrollers, Custom PCB DesignTechniques: Embedded systems, Microcontroller Programming, 220v Pump Controlling using contactors

Intelligent water tank filling system to Hotel ALOFT Grand, Ella

2020

- Intelligent tank filling system, tanks located in three height levels. Controlling water pumping and solenoid valves to direct water to tanks necessary
- *Technologies: C++ Atmel Micro controller, Custom PCB design*
- *Techniques: Embedded systems, MicroController Programming, 220v Pump Controlling using contactors*

ACHIEVEMENTS

Algorithmic Programming Competitions

Code Squad v3.0 - 2022
Country Rank - 2, more than 150 teams

MoraXtreme 7.0 - 2022
Country Rank - 1, more than 150 teams

IEEExtreme 16.0 - 2022
Country Rank - 3, World Rank - 130 more than 6500 teams

IEEExtreme 15.0 - 2021
(Country Rank - 4, World Rank - 109 more than 5500 teams)

DECODE 1.0 - 2021
Country Rank - 3, more than 100 teams

IEEExtreme 14.0 - 2020
Country Rank - 9, World Rank - 124 more than 2200 teams

Google Code Jam - 2020
Selected to round 2 (world rank - 3847 more than 96,000 teams

Google KickStart - 2020
Round A (world rank - 2777 more than 100,000 teams)

IEEExtreme 13.0 - 2029
Country Rank - 7, World Rank - 172 more than 4000 teams

UOJ Coders v8.0 - 2019
Second Runners-up (more than 100)

Pre-Extreme - 2019
Second Runners-up (more than 30 teams)

ACES Coders v8.0 - 2019
Country Rank - 5 (more than 120 teams)

ACES Coders v7.0 - 2018
Country Rank - 7 (more than 120 teams)

Other Competitions

ACES Hackathon - 2019
Finalists - Project: SAFERO (Safe Route Escape System During Flood)

SLIIT Overnight Hackathon - 2019
Finalists

SLIIT CODEFEST - 2019
Merit Award - Project: You See World (Personal Guidance System to Blind people)

PROJECTS

Escape route generation system during floods

2019

- Generates escape routes during floods by estimating water levels in rivers and inundation maps.
- *Technologies: Flutter, Google Maps Direction API*
- *Techniques: Shortest Path and optimization algorithms*

Guidance Assisting System for visually impaired persons

2019

- Stick with sensors and chest mount camera to process images, notify the details about surrounding to the blind person through a vibration belt. And a user friendly app with voice control capabilities (to find the stick if misplaced or notify relatives if the blind person needs help).
- *Technologies: Arduino Microcontroller, Raspberry Pi, Ultrasonic Sensors, Gyroscope, OpenCV, Tensorflow*
- *Techniques: Sensor Calibration, Vibration Pattern Optimization, Android Studio, Bluetooth Communication*

Airport Ticket Booking System

2019

- Web application and Mobile Application with a Database Management System for passengers and airports.
- *Technologies: Dart, MySQL, PHP, HTML, CSS*

Various Other Hobby/Course Projects

2018 – 2019

- Analog Line Follower (PD Controller based), Logic Gate level implementation of a 4-digit pass-code lock, Smart home system with raspberry PI, Wire Bending Machine (CNC)
- *Technologies: Analog and Digital Electronics, Arduino*

COURSES

The remote training program for Embedded Technology Engineer in Sri Lanka - Advance Program (Performance level A), Conducted by AOTS Japan

2022

- Embedded system and robotics course with a project for selected students.

Neural Networks and Deep Learning, conducted by DeepLearnig.AI

2021

Introduction to Networks, CCNA Routing and Switching

2020

ACHIEVEMENTS

HACKDEV Youth Social Innovation Challenge - 2019
Selected to final teams (Get an opportunity and funds to develop our project as a product) - Project: You See World (Personal Guidance System to Blind people)

IEEE Advancing Technology For Humanity Humanitarian Technology Product Competition, General Track - 2018
Runners UP - Project: You See World (Personal Guidance System to Blind people)

IEEE SS12 Age of Innovation Product Competition
Runners UP - Project: You See World (Personal Guidance System to Blind people)

REFEREES

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