

DININDU THILAKARATHNA

Computer Engineering Undergraduate

@ dininduwm@gmail.com
dinindu-thilakarathna

+94777186434
HackerRank

https://dinindu.me
@dtdinidu7

dininduwm



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, Sri Lanka

- 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++

FPGA Related Research Internship

2022 Nanyang Technological University, Singapore

- Performance Estimation of FPGA Modules for Modular Design Methodology using Artificial Neural Network. Synthesizing huge designs to FPGAs takes a lot of time sometimes it takes up to days. So in our approach, we tried to estimate the performance prior to synthesizing using Artificial Intelligence methods
- xilinx FPGA, Verilog

PROJECTS

This link is directed to my portfolio site it contains more details about the projects I have done.

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

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

Operating Systems

linux (Bash shell) Mac Windows

Database

MySQL MongoDB

PROJECTS

RV32IM Pipeline processor with caches and memory

📅 2021 - 2022

- Designed 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](#)

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 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



IEEEExtreme 16.0 - 2022

Country Rank - 3, World Rank - 130 more than 6500 teams



IEEEExtreme 15.0 - 2021

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



DECODE 1.0 - 2021

Country Rank - 3, more than 100 teams



IEEEExtreme 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)



IEEEExtreme 13.0 - 2020

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

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*

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

Prof. Roshan G. Ragel

@ Dept. of Computer Engineering, University of Peradeniya

✉ roshanr@eng.pdn.ac.lk

Dr. Isuru Nawinne

@ Dept. of Computer Engineering, University of Peradeniya

✉ isurunawinne@eng.pdn.ac.lk