

Hemakanth Natkunaraja

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📁 My Portfolio | in My Linkedin | 🐙 Github/Hemakanth |

PERSONAL PROFILE

I'm a passionate and adaptable fresher with a strong foundation in electronics, embedded systems, IoT, signal processing, and wireless communication. Eager to explore new technologies and excited to apply my knowledge to solve real-world engineering challenges. Commitment to continuous learning, I'm eager to contribute innovative and practical solutions to meaningful projects in electronics and embedded systems.

EDUCATION

- | | | |
|---|----------------|------------|
| * University of Jaffna, Sri Lanka | 2021 – Present | |
| BSc (Hons) in Electrical and Electronic Engineering (UG) | | |
| Overall G.P.A: 2.9/4.0 | | |
| * KM/TK/Thambiluvil Madya Maha Vidyalyaya | 2011 – 2019 | |
| Advanced Level: | | |
| Combined Mathematics: B | Chemistry: A | Physics: B |
| Z-score: 1.7508 | | |

PROJECTS

Non-invasive device of predicting Blood Glucose Level of Human (project of 2 members)

- Ongoing final year research on a non-invasive method to predict human blood glucose level and Diabetes using photoplethysmography signals obtaining from fingertips and machine learning models trained using other clinical data of patients. The aim is to develop a non-invasive device an affordable cost for patients.
- Tools Used: Digital Signal Processing,C++, Pulse oximetry sensors, ESP 32,Firebase

Maze Solving Robot (Project of 4 members)

- Maze-solving robot that uses IR sensors and Encoders to solve mazes with the help of a flood-fill algorithm. This project was made to participate in the competition 'Robofest 2023', organized by SLIIT.
- Tools Used: Arduino-Nano, Floodfill algorithm
- Language: C++

Automatic Traffic light Control (Group Project)

- Developed an automatic traffic light controller for pedestrian crossings using VHDL on an FPGA board. Implemented finite state machines (FSM), synchronous logic, and timing constraints. Verified functionality through testbench simulation.
- Tools Used: FPGA programming board, ModelSim-Altera, Ultrasonic sensors, 7-segment LED display
- Language: VHDL, Verilog

Line follower robot with color sorting capability for an effective garbage dumping (Project of 3 members)

- Involved integrating IR, color detection sensors, and optimizing the embedded control system using a microcontroller.Programmed the robot to follow designated paths and sort waste based on color recognition, ensuring a seamless workflow for garbage segregation.
- Tools Used: Arduino Uno

Pick and Place Robotic arm Simulation (Individual)

- Used RoboDK and Simulink to simulate a commercial usage pick and place robotic arm that is used for assembling electronic devices in factories.
- Tools Used: RoboDK, Simulink

SKILLS

TECHNICAL SKILLS

- Circuit Designing and analysis -LTspice, Proteus, and Multisim
- Signal Processing -Filters, Hands-on Wavelet and Fourier transforms, Noise reduction.
- PCB designing -Using Altium Designer, Proteus.
- Hands-on experience in Google Firebase and real-time data collection using ESP 32.

PROGRAMMING

- Programming languages: C++ , Python, Matlab
- HDLs - VHDL and Verilog

CERTIFICATION

- Machine learning with Python by IBM
- Introduction to Power Electronics by the University of Colorado Boulder
- Introduction to Solar cells by DTU
- Cisco CCNA Course packet tracer course (Reading)
- Crash Course Electronics and PCB Design(Reading) by Udemy

EXTRACURRICULAR AND LEADERSHIP

- Secretary of Electrical and Electronic Engineering Society, University of Jaffna
- Editor in IEEE PES Society, University of Jaffna
- Editor in Engineering Week 2024 (Annual series of events)
- Event Coordinator in IEEE Signal Processing Society, University of Jaffna
- In the Media Committee of Engineering Student Union, University of Jaffna

REFERENCES

Dr.Mukunthan Tharmakulasingam

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