



Yasiru Nipun Basnayake
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SUMMARY

As a third-year Electronic and Telecommunication Engineering undergraduate, I'm dedicated to mastering a range of electronic applications and developer tools. My passion lies in applying deep learning and machine vision to enhance electronic product design and robotic systems.


Areas of Interest: Deep learning for computer vision, Robot automation, Embedded systems, Machine learning, Electronic product design

EDUCATION

- University of Moratuwa** Aug. 2022 - present
Bachelor of Science (Hons) in Engineering Electronic and Telecommunication Engineering CGPA/Percentage: 3.73/4.0
- Maliyadeva College, Kurunegala**
GCE Advanced Level - Physical science stream - 3A passes with a Z-score of 2.6046 Feb. 2012 - Aug. 2020
GCE Ordinary Level - 9As

PROJECTS

- LUNA: Vision-based Automated Restaurant Robot** 2024
Electronic Design Realization
 - Tools & technologies used: Robot Operating System (Noetic, Iron), Kinect 2 depth camera, Rtabmap, Turtlebot, Kalman, Ubuntu 22.04 LTS, Atmel Microchip studio, CMake, libfreenect2, Localization, PID, PCB design, SLAM, python, serial, SolidWorks
 - Developing a Restaurant Robot using ROS and Kinect2 equipped with a custom kalman-based food stabilization tray avoiding beverage spillage for autonomous navigation and interaction, enhancing efficiency in restaurant environments with advanced sensor technologies and robotic functionalities with custom restaurant environment planner front end.
- TechBot: STM32/Vision-based Robot** 2024
Sri Lanka Robot Competition 2024
 - Tools & technologies used: STM32, Raspberry Pi, Machine Vision, Cube IDE, PID
 - An innovative robot features a custom-designed 4-layer PCB, centered around the STM32F405VGT6 ARM-M4 168 MHz microcontroller IC. Complementing this is a Raspberry Pi 4b, responsible for handling sophisticated machine vision and navigation tasks.
- Cosmo Robot** 2024
EN2533: Robot Design and Competition
 - Tools & technologies used: Atmega2560, Mechanical arm Design, PID, Chassis Design
 - an ATMEGA2560-based robot showcasing precise line following, wall avoidance, ramp navigation, mechanical arm interaction, sound sensitivity, color detection, maze-solving, and obstacle avoidance.
- Stable Diffusion Based Criminal Face Generation Platform For Forensic Identification** 2024
IEEE IES Generative AI Hackathon, Aurora 24
 - Tools & technologies used: LLMs, PyTorch, Stable Diffusion models, Hugging Face Transformers, ONNX
 - Developed AI-driven solution leveraging stable diffusion models to enhance accuracy & efficiency in forensic facial synthesis, aiding law enforcement in suspect identification. Improved existing methods, minimizing subjective interpretation & manual effort.
- A Vision-Language driven Navigation system with SLAM** 2024
personal
 - Tools & technologies used: ROS 2 Iron Irwini, Ubuntu 22.04, Gazebo, HuggingFace Transformers, Salesforce BLIP, Whisper, Nav2, Mistral AI)
 - A SLAM-based navigation system using vision-language inputs to guide a robot with natural language instructions and image feeds. Equipped with a Kinect V2 sensor, it integrates ROS 2, Ubuntu, Gazebo, HuggingFace Transformers, Salesforce BLIP, Whisper, Nav2, and Mistral AI for autonomous navigation and task execution.


- **Ratatouille : A fast Maze traversing micromouse**  2024 - Ongoing
SLIIT : Robofest - Progressing


 - Tools & technologies used: SolidWorks, Altium Designer, Cube IDE, Flooffill, Gazebo, Webots
 - Fast Maze-Traversing Micromouse navigating complex mazes autonomously using advanced sensors and algorithms
- **ClariFi : Medical Report/Scan Analyser Assistant Application with AI**  2024
Idealize 24


 - Tools & technologies used: React Native, Django, Firebase, Llama 3 Medical, Medical based LLMs, Optical character recognition, Medical Scan semantic analysis and classifiers, API, Redux, Google Authentication
 - ClariFi an Ai driven app developed for medical report analysis, featuring a user-friendly interface for uploading and analyzing medical reports and scans such as X-rays, MRIs, ultrasounds and etc. Utilizing advanced Optical Character Recognition (OCR) and natural language processing and Chat features, it provides clear summaries and highlights key findings. The backend is powered by Django and Firebase, ensuring efficient server-side operations.
- **Custom Robot Arm Simulation and Pick-and-Place Automation**  2024
personal

 - Tools & technologies used: SolidWorks, URDF (Unified Robot Description Format), MoveIt 1, Gazebo, ROS Noetic, Ubuntu 20.04, Python, Machine Vision
 - Developed a custom robot arm simulation with SolidWorks and URDF, utilizing MoveIt 1 for joint verification and tuning PID controllers. Integrated Gazebo camera feeds for a pick-and-place operation using ROS Noetic on Ubuntu 20.04, scripting in Python for precise end effector movements and machine vision.
- **Earendel Pro-Track: IoT-based Stargazing Telescope Mount**  2024
SLIOT challenge 2023

 - Tools & technologies used: Equatorial Mount Design, MEMS, PID, Mathematical Models, Celestial Databases, Mobile/Web App Development, PCB design
 - Earendel Pro-Track integrates IoT into a telescope mount for automated celestial tracking. Enhancing stargazing experiences, it offers real-time updates, user-friendly controls, and educational value at an affordable cost.
- **NeuralVoice - A Neural Interface Communication Device for Individuals with Paralysis** 2024
Brainstorm 24




 - Tools & technologies used: EMG signal processing hardware design, Machine learning, Language models, Text-to-speech (TTS) technology, Predictive Text
 - Empower paralyzed individuals with a device decoding neural impulses for communication. Utilizing EMG signals, ML models, LLM refinement, and TTS, it enhances social integration and mental well-being.
- **FoodFocus: Smart Consumption Tracker**  2023
EN1190 - Engineering Design Project

 - Tools & technologies used: Loadcells, Arduino IDE (C++), Altium Designer (PCB design), SOLIDWORKS (Enclosure design)
 - FoodFocus tracks sugar, salt, and oil consumption, indicating daily limits. Using loadcells, ATmega, and sophisticated manipulation, it provides detailed reports and doubles as a clock with alarm features.
- **Analog Function Generator**  2023
EN2091: Laboratory Practice and Projects

 - Tools & technologies used: LTspice, NI Multisim, Altium Designer (PCB design), Blender (Enclosure sketching), SOLIDWORKS (Enclosure modeling), Canva (Sticker design)
 - Analog function generator generates sinusoidal, triangular, saw tooth, and PWM signals upto 20Khz with variable parameters. Designed using analog components, it features versatile waveform options and easy signal output.
- **IoT based Medicine Storage**  2024
EN2853 Embedded Systems and Applications project

 - Tools & technologies used: Wokwi simulations, IoT, MQTT, NodeRed, JavaScript, ESP32)
 - Smart Medibox is a smart device designed to assist users in managing their medication effectively. It integrates several features to ensure medication adherence and proper storage conditions.
- **Home energy monitoring system integrated with home automation** 2024
IEEE Sri Lanka Challenge Sphere 2024 - Arduino Challenge

 - an interface designed to be integrated with existing domestic electrical systems in Sri Lanka, that is capable of monitoring individual power usage of outlets and integrate the outlets with home automation.

- Deliveroo Food Delivery App Fullstack replica**  2024
personal
 - Tools & technologies used: React native, Sanity CMS Backend, Redux, TailwindCSS, and React Native Navigation, Google Maps API)
 - seamless Fullstack food delivery experience with Deliveroo Clone App, a React Native iOS app clone of Deliveroo. Powered by Sanity CMS, Redux, TailwindCSS, and React Native Navigation, this app offers enhanced features and a sleek animated checkout flow for an exceptional UI/UX.
- Uber App Fullstack replica**  2024
personal
 - Tools & technologies used: React Native, Redux, Tailwind CSS, Google APIs, Apple Google Maps, React Native Navigation, React Native Elements
 - Fullstack experience with Uber Clone App, a React Native iOS app clone of Uber. Powered by Map APIs, Redux, TailwindCSS, and React Native Navigation, feature-rich application for both iOS and Android, leveraging powerful technologies and APIs.
- Fullstack Netflix Rebuild**  2024
personal
 - Tools & technologies used: Google Authentication, NextJs, Subscription Management, Stripe Payments, Firebase CLI, Deployment, TailWind
 - Fullstack Netflix platform rebuild with NextJs released by Vercel. Featured with subscriptions and payment integration, Sleek UI with motion animations, Firebase Authentication and Movie Database updated with API
- UART implementation with FPGA** 2024
 - Tools & technologies used: FPGA, Raspberry Pi, Verilog, Uart
 - The UART (Universal Asynchronous Receiver-Transmitter) protocol for serial communication on an FPGA. The design was simulated using Intel Quartus Prime and deployed on an Altera DE0-Nano development board.
- Automated Telescope Celestial Tracker wih Machine Vision** 2024 - ongoing
Evolve '24
 - an IoT-enhanced celestial tracker for seamless stargazing and astrophotography, automating setup, leveling, and celestial tracking to enhance user accessibility and experience in astronomy.

EXPERIENCE

- Fiverr™** 3Yr
Freelance Seller Virtual Freelance marketplace

AWARDS AND SCHOLARSHIPS

- First Place Champions | IEEE Sri Lanka Challenge sphere | Sri Lanka Arduino challenge 2024**
Home energy monitoring system integrated with home automation, out of 100 Entries 2024
- 1st Runner Up | Aurora 24**
Stable Diffusion Based AI Criminal Face Generation Platform For Forensic Identification , out of 45 Projects 2024
- Finalists | SLIOT Challenge 2023 - Open Category IOT Challenge**
Earendel Pro Track: IoT-based Automated Telescope Tracker mount 2024
- Finalists | Sri Lanka Robotic Challenge 2024 - University Category**
TechBot: STM32/Vision-based Robot : out of over 100 registrations 2024
- Finalists | IEEE IES Generative AI International Hackathon**
Stable Diffusion Based Criminal Face Generation Platform For Forensic Identification , out of 150 entries 2024
- Finalists | CodeSquad v3.0**
Coding Hackthon Organized by University of Sri Jayawardenapura 2023
- SemiFinalists | Brainstorm 24**
NeuralVoice - AI based Neural Interface Communication Device for Individuals with Paralysis 2024
- SemiFinalists | CodeSprint 24**
HyperTalk: Real-time Bidirectional Sign Language Translation Tool/App 2024
- Mahapola Higher Educational Scholarship 2021**
For the performance in GCE AL examination 2021

COURSE CERTIFICATIONS

- **Advanced Deep Learning Techniques for Computer Vision (MathWorks)** 2024
- **Deep Learning for Object Detection (MathWorks)** 2024
- **Introduction to Deep Learning for Computer Vision (MathWorks)** 2024
- **Beginning Custom Projects with Raspberry Pi (The Johns Hopkins University)** 2024
- **AI for medical Diagnosis (DeepLearning.AI)** 2024
- **Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization**
DeepLearning.AI 2024
- **Structuring Machine Learning Projects (DeepLearning.AI)** 2024
- **Supervised Machine Learning: Regression and Classification (DeepLearning.AI)** 2024
- **Introduction to Git and GitHub (Google)** 2024
- **Generative AI: Foundation Models and Platforms (IBM)** 2023
- **Artificial Intelligence on Microsoft Azure (Microsoft)** 2024
- **Problem Solving, Javascript(intermediate), Java, C#, Python, SQL, React(basic) skills**
Hackerank 2023

POSITIONS OF RESPONSIBILITY

- **Public Relations**, SIG in Embedded Hardware 2024
- **Resource Panel member**, Mora NexGen 1.0 IEEE RAS 2024
- **Team Lead**, Project Earendel Pro Track 2024
- **Team Lead**, Project Clarifi 2024
- **Team Lead**, Project Neuralink 2024
- **Team Lead**, Project LUNA 2024
- **Team Lead**, Project Cosmo Robot 2024
- **Team Lead**, Project Ratatouille 2024

TECHNICAL SKILLS AND INTERESTS

Languages: Java, C, C++, C#, Python, SQL, React.js, JavaScript

Developer Tools: MATLAB, Microsoft Azure, Version Control (Git and GitHub), Moveit, SLAM toolbox, NAV2, AMCL, Rtabmap, TensorFlow, Altium Designer, SolidWorks, Adobe Toolkit, Webots

Frameworks: ROS1/2, TensorFlow, PyTorch, Scikit-learn, React Native, TailwindCSS

Cloud/Databases: Microsoft Azure, SQL, Firebase

Soft Skills: Problem Solving, Strategic Decision-Making, Project Management, Team Leadership, Marketing

Coursework: Generative AI, Machine Vision, Deep Learning, Applied Machine Learning, Engineering, Project Management

Areas of Interest: Robotic Automation, Deep Learning for Computer Vision, Machine Learning, Embedded Systems, Electronic Product Design, 3D Graphics

REFERENCES

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