

Muhammed Nihal C

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Degree	Institute/School	Year	CGPA
B.Tech., Electrical and Electronics	Rajagiri School of Engineering and Technology, Kochi	2020-24	7.9
Class 12, CBSE	Prestige Public School, Calicut	2017-19	8.4
Class 10, CBSE	Prestige Public School, Calicut	2016-17	10

PROFESSIONAL EXPERIENCE

- **Embedded Engineer - Full time** | *ARTPARK INDIAN INSTITUTE OF SCIENCE* (Feb'25-Present)
 - **Autonomous vehicle navigation control:** Transforming an all-terrain IC engine vehicle into a fully autonomous, multipurpose system. Utilizing STM32 for low-level control and Jetson Orin Nano for high-level processing.
 - **Neural-Based PID Velocity Control:** Integrated neural network-based learning for adaptive PID control, optimizing the vehicle's velocity regulation.
- **Embedded Engineer - Full time** | *Energy 24/7* (July'24-Feb'25)
 - **Designing, building and testing the firmware of the project OBC (On Board Charger) for O/E/N India Limited:** The project utilizes the XMC 1403 microcontroller. It primarily requires intelligent current control based on voltage and temperature. The control should adhere to the Lithium-ion battery charging profile. Used Pulse Width Modulation (PWM) for controlling. Designed and tested the entire algorithm and firmware.
 - **Resolving errors in the existing firmware of the released products.** Correcting some of the errors in the existing product based on customer reviews and providing new firmware for the interim build.
 - **Hardware Debugging and components assembling for the custom board:** Unit testing the newly designed custom board using the Rp2040 microcontroller and the ESP32 microcontroller for the upcoming MPPT project.

TECHNICAL SKILLS

- **Programming & Scripting Languages:** C, Python, Javascript, HTML5, CSS, ROS
- **Tools & Libraries:** Flask, MySQL, NodeJs, ReactJs, Sci-kit learn, Docker, Kubernetes, MongoDB, MATLAB, Arduino, Raspberry pi, Linux, DAVE
- **Tech Domain:** Data Structure and Algorithms, Embedded systems, Applied Machine Learning, Data Analytics, Web Development, Software development

POSITION OF RESPONSIBILITY

- **Founder and Lead** | *Hack club RSET* (june'21-Present)
 - Founded hack club in the year 2021
 - Lead the club, conducted events and made the club one of the top clubs
- **Co-founder** | *SOCIAL* (June21-Present)
 - platform for social impact entrepreneurs to share and validate their idea
 - Conducted national-level boot camps twice
 - provided funding and training for social impact startups.
 - Partnered with 180 Degree consultancy for sessions
 - Created weekly newsletter with more than 1000 subscribers
- **Chairman** | *IEEE RSET Student Branch* (March'23-May'24)
 - Lead IEEE RSET SB
 - conducted 30 events, renovated an unused bus into an IEEE room, made developments to the membership number and quality
- **Webmaster** | *IEEE RSET Student Branch* (February'22-March'23)
 - Made and hosted IEEE RSET Official website
 - Maintained and updated the website and events. conducted multiple events.
- **Membership development coordinator** | *IEEE Kerala section* (February'23-March'24)
 - Provided support to membership count increase
 - conducted major membership events, MDLT-funded event
- **Alumni** | *Millennium Campus Network* (March'22-present)
 - Co-founded social a platform for social impact
 - Provided funding and training for startups
- **Millennium fellow** | *United Nations* (March'22-March'24)
 - Completed a semester-long project
 - Conducted national-level boot camps and hackathons.

MAJOR PROJECTS

SOFTWARE PROJECTS

- **Project management software - Nobex Interiors pvt ltd**
 - A comprehensive web-based project management solution built for an interior design company to streamline their operations, manage projects, and track finances. The system features:
 - Key Features: • Multi-user role-based access control with granular permissions • Project lifecycle management with customizable phases and status tracking • Task management with subtasks, file attachments, and audio messaging • Vendor management with purchase and payment tracking • Financial management including expense tracking, income recording, and profit calculation • Incentive management system with automated calculations and withdrawal tracking • Google Calendar integration for task scheduling • Real-time activity tracking and notifications • Comprehensive reporting with PDF and Excel exports
 - **Tech:** Python, Flask, HTML, CSS, JS, Jinja, Google APIs, Mysql, Hosting.
 - **Recognition:** Project accepted by Nobex Interiors
- **Project management software- M M KAKRECHA Pvt Ltd**
 - A premium, full-featured construction management web application designed to streamline and digitize project operations for construction companies. Built with Flask, SQLAlchemy, and Bootstrap, the platform offers a modern, elegant interface and robust role-based access for admins, supervisors, and laborers.
 - Key Features: • Multi-role project and user management (admins, supervisors, laborers) • Location-based attendance with photo, geotag, and salary adjustments • Project-wise inventory control with real-time tracking and material requests • Task assignment with status tracking and project linkage • Detailed expense logging with category-wise summaries • Centralized photo uploads and PDF report generation • In-app messaging for seamless team communication • Role-based dashboards for each user type • Mobile-responsive UI with premium blue-themed design • Enables efficient collaboration, transparency, and secure data-driven decisions
 - **Tech:** Python, Flask, HTML, CSS, JS, Jinja, Google APIs, Mysql, Hosting.
 - **Recognition:** Project accepted by M M KAKRECHA Pvt Ltd
- **Autoquot - Developed for Nobex interiors pvt ltd**
 - AutoQuot is a comprehensive inventory and quotation management system built with Python Flask and modern web technologies. This full-stack application streamlines business operations by providing:
 - Key Features: • Advanced inventory management with real-time stock tracking and QR code generation • Automated quotation generation and management • CRM with customer transaction history and reporting • Vendor management with purchase tracking and insights • Google Sheets and Drive integration for seamless data handling • Bulk product management via CSV import • Delivery and staff management modules • Secure authentication with role-based access control • Responsive web interface for desktop and mobile
 - **Tech:** Python, Flask, HTML, CSS, JS, Jinja, Google APIs, Mysql, Hosting.
 - **Recognition:** Project accepted by Nobex Interiors
- **Site Migration**

HARDWARE PROJECTS

- **PULSE-Pool Underwater Life Saving Equipment**
 - Developed autonomous drowning detection system that rescues a kid drowning. we implemented drowning detection using Yolo v3 and custom-trained data. the model was integrated using Esp32
 - The most effective model was incorporated with a Motor buzzer system that pushes the person in distress along with an alert.
 - **Tech Used:** Python, CNN, Yolo, Machine Learning Algorithms, Esp32, Geared motors.
 - **Recognition:** KTU CERD Award winner, Ksummit finalist, Srishti national level hackathon finalist, Presented at National Student Energy Summit (NSES 2024)
- **LBTMS – Battery Thermal Runaway System**
 - Project LBTMS is a standalone battery management system that aims to protect EV vehicles in terms of hazards caused by thermal runways, short circuits, and all the other heat-related parameters.
 - integrated both hardware and software making a user-friendly website where user can see the live data (All the parameters needed for fault analysis) from an EV battery internal structure and compare, validate and utilise that data for efficient isolation thus achieving Both automatic and manual control of charging and discharging of the battery system.
 - **Tech Used:** Python, Flask, MySQL, Esp32, C, HTML, CSS, Javascript, Wix developer tools, CORS, Hosting.
 - **Recognition:** KREEPA GREEN POWER EXPO 23 finalist, O/E/N Technology Innovation Award 2023
- **PARAS – Precision Agriculture System**
 - PARAS is a cutting-edge, fully automated system for precision farming and farmer support.
 - The early identification of pests, both during their initial and mature stages, is achieved through the integration of advanced AI algorithms
 - The deployment of multiple sensors allows for efficient data collection and sharing, which is critical for making informed decisions.
 - made a smart container and a platform for data viewing
 - smart container provides ambient conditions for proper growth based on the data collected
 - **Tech Used:** Python, Flask, MySQL, Esp32, C, HTML, CSS, Javascript, Wix developer tools, CORS.
 - **Recognition:** Kerala Government Startup Hackathon finalist
- **SOCIAL-Student Open Collaboration for Innovative Applications**
 - Social is a non-profit organization that aims to develop social impact startups.
 - Made a community where social impact startups can share and validate their ideas. conducted international boot camps, and national-level hackathons.
 - **Tech Used:** HTML, CSS, web hosting, Github, startups, SDG
 - **Recognition:** Official selection for millennium fellowship program 2022 and 2023 by United Nations.
- **ALPS - Advanced Liquid Purification System**
 - Opensource modular water purification system
 - Made a modular purifier with natural constituents that suit the impurity type and locality.

- Created a Python program to fetch the product from a website and create a Google sheet based on the requirements
- The program uses GraphQL API to fetch products (Approx 500 products per day) based on the filters from the website Stacknack and update it on the Google sheet
- Google sheet then helps another website Grailed to update their product database
- **Tech Used:** Python, GraphQL, API, Googleapis, JSON Handling, Data management
- **Recognition:** Project Done and verified for the company Grailed under the consultation of John Mathew Principal Consultant at Arambankudyil Consultancy.
- **Project Virgin Hyperloop**
 - Developed a passenger flow system for the Virgin Hyperloop contest connected by IIT Bombay.
 - Made website for easy passenger flow and proper pod planning for the Mumbai station provided.
 - **Tech Used:** Python, Flask, MySQL, Wix developer tools, Javascript, Machine Learning
 - **Recognition:** Runnerup HyperOps, a national competition held by Techfest, IIT Bombay
- **Incors.Inc**
 - A platform where people can search for their lost items
 - Platform where we can post the found item and search for any lost items. Either an APP or an API can do the task. So if someone has lost an Aadhar card he can take the app and search for his name under the Aadhar section or can narrow down the search results by the location Filter or anything related
 - **Tech Used:** Python, Flask, Wix, MySQL, python anywhere
 - **Recognition:** Dothack 23 national level hackathon finalist.
- **My Piggybank**
 - UPI savings tracker with reminders/goals.
 - Can add primary and secondary needs for proper finance management with visuals charts and graphs • Can add dreams so that I will show amount to be saved for a given time period
 - **Tech:** Flask, HTML, CSS, JS, Jinja, MySQL, PWA, Hosting
- **Website for - Luxurlive, SQUADINS**
 - Developed and hosted a static website for LUXURLIVE, a company that specializes in premium products, to showcase their offerings.
 - Developed and hosted a static website for a Saudi-based construction company named Squadins.
 - **Tech:** HTML, CSS, JS, Hosting
- **Tech Used:** Modular flow of liquid, algae, UV, 3d printing and CNC.
- **Recognition:** Presented at the capacitive building program by STEAG Centre for Smart City Technologies.
- **WADS – Wild Animal Detection System**
 - Program that detects wild animals
 - The program can simultaneously detect the animal structure both in daylight and at night with smart IR scope of vision. It can identify and send signals to the authorities before it's too late. Covering the areas with frequent attacks like Wayanad, Thekkadi, Munnar, etc.
 - also implemented quick safety measures like Ultrasonic sound emission
 - **Tech Used:** Esp32, C, pictoblocks, Teachable machine
 - **Recognition:** Dothack 22 national level hackathon finalist.
- **Autocart**
 - Autocart is the next step on the road to revolutionising the retail shopping experience. A mobile app accompanies the system, where the user will input their shopping list; the accompanying mobile app will send the data forward to the robotic cart. Equipped with image processing for item detection, the cart will self-navigate on a predefined path around the aisles in the store, track down the items, and collect them.
 - **Tech Used:** Arduino, Adafruit motor shield, CNC, 3d printing, C, HTML, CSS, Javascript, Hosting, image processing, Raspberry Pi, Sensor integration, Robotic arm, Python, Flask, MySQL
- **Automatic Sleep Detection System**
 - System that detects sleeping and drowsiness
 - Give sound alert upon sleep detection. In cars give small shock to wake the driver who is slept
 - **Tech Used:** C, Teachable machine, Pictoblocks, arduino, p5script, javascript.
- **Food and feed**
 - Key Features: • Food distribution app for minimizing household and industrial food waste • Real-time quantity and quality monitoring with sensor integration • Shelf life prediction using temperature, humidity, and distance data • Continuous data capture from smart containers with sensor modules • Data visualization and processing via MySQL backend • Web interface built using Wix developer tools with embedded project demo video • Backend logic powered by Python and Flask • Hosted on PythonAnywhere with API and CORS support • Skills: Python • C • Flask • MySQL • Wix • TinyML • Web Development • PythonAnywhere
 - **Tech Used:** C, Teachable machine, Pictoblocks, arduino, p5script, javascript.

INTERNSHIPS

- **Embedded system designer | Energy 24/7** (February'24-May'24)
 - Designing and testing the firmware of the new RP2040 designed for the new product
 - Debugging the custom board
- **AWS | IIIT Kottayam** (May'23-May'23)
 - Made an E-commerce website
- **Capacitive building program | STEAG India** (June'22-July'22)
 - Made a modular water purification system
- **Brand Ambassador | IFORTIS WORLDWIDE™** (May'21-June'21)
 - Brainstorming new marketing ideas and sales promotions