

ANUSHA KALAM

Embedded Developer

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Highly motivated Embedded Developer with 3 years of experience in embedded systems, seeking a challenging full-time position. Proficient in C and Python programming languages, with a strong foundation in embedded system development. Possesses excellent time management, problem – solving, and interpersonal skills to contribute effectively to a dynamic team.

Programming Languages

- Python
- C (Programming Language)

Operating Systems

- Ubuntu
- Windows
- RTOS

Tools

- Visual Studio
- Google Colab
- Jupyter Notebook
- STM Cube IDE
- JTAG Debugger
- Putty
- Git
- Ardino IDE

Key Skills

- Good problem solving skills
- Good communication skills
- Good knowledge of micro-controller and Embedded devices
- Automation using Python Scripts
- Implementing Machine Learning Algorithms
- Bare Metal programming
- Programming using RTOS
- Familiar with I2C, SPI and UART protocols, sensors
- MQTT connections
- Sever connections

Work History: Embedded Developer

Company : Micrologix, Bangalore

Client : Applied Materials, Bangalore

Feb 2025 – Till date

Project : Smart PDU (Power Distribution Unit) Development

Description:

Developed a Smart PDU system to monitor, control, and protect up to 12 power sockets. The system measured real-time power consumption, environmental conditions, and socket status using the Nucleo-PM33A1 energy meter IC (integrated over SPI) with STM32H755ZI-Q MCU. The project included configuring the X-CUBE-PM33A1 software package in STM32CubeIDE/STM32CubeMX for SPI-based metering, integrating an SHT31 temperature and humidity sensor via I²C, developing a web interface for live monitoring, and implementing TCP/IP-based command-line control.

Roles & Responsibilities:

- Installed and configured X-CUBE-PM33A1 software package in STM32CubeMX for SPI interface with the PM33A1 energy meter IC.
- Integrated and calibrated real-time acquisition of voltage, current, power, energy, and power factor readings.
- Interfaced the SHT31 temperature and humidity sensor using I²C protocol and integrated its data into the monitoring system.
- Used AC/DC supply, CT sensors, resistors, jumper wires, and multimeter for hardware setup and calibration.
- Developed a web dashboard to display live electrical parameters and environmental data.
- Configured TCP/IP stack for Ethernet-based remote control and monitoring.
- Implemented threshold-based alarms and event logging for socket overcurrent, over/undervoltage, and system warnings.

Sw/Hw Tools Used:

Software:

- STM32CubeIDE
- STM32CubeMX
- X-CUBE-PM33A1 package
- Embedded C
- Web interface (HTML/CSS/JavaScript)
- TCP/IP Stack

Hardware:

- STM32H755ZI-Q
- Nucleo-PM33A1 (SPI)
- SHT31 Sensor (I²C)
- CT Sensors
- AC/DC supply
- Multimeter
- Jumper wires

Operating System:

- Embedded Firmware (Bare Metal)
- Windows

Rezler Systems, Bangalore

March 2024 – Jan 2025

Project : Security Surveillance Camera Systems Using Raspberry Pi and ESP32

Description: The project focuses on developing advanced security surveillance camera systems. It captures images using Raspberry Pi and ESP32 cam, sending them to an API, which returns image URLs for server-based incident reporting. Additionally, the system supports features such as face recognition, object detection, video and audio recording, live streaming, and motion detection. The system is integrated with an MQTT server and includes a mobile application for remote control.

Roles & Responsibilities:

1. Image Capture and API Integration:

- Developed a module to capture images using Raspberry Pi and ESP32 cam.
- Implemented API integration to send captured images to an external server, receiving image URLs in response.
- Sent image URLs to a central server for incident reporting.

2. Face Recognition and Object Detection:

- Integrated OpenCV libraries to implement face recognition and object detection.
- Optimized models for real-time performance on edge devices.

3. Video and Audio Recording:

- Developed video and audio recording capabilities using Raspberry Pi.
- Integrated a digital microphone for high-quality audio capture.

4. Live Streaming and Motion Detection:

- Implemented live streaming functionality for real-time monitoring.
- Added motion detection features to trigger alerts and recordings.

5. Mobile Application Integration:

- Developed a mobile application interface to start and stop video recording remotely.
- Implemented command-based controls for various functionalities.

6. MQTT Server Integration:

- Integrated an MQTT server for efficient message passing between devices and the central server.
- Enabled remote control and monitoring via MQTT.

Sw/Hw Tools Used:

Software:

- Visual Studio
- arduino IDE
- OpenCV library
- Python scripts
- MQTT broker and clients
- postman tool
- web interface
- VNC viewer

Hardware:

- Raspberry Pi 4 Board
- ESP32 cam
- SD card
- jumper wires
- I2C camera(5Mp ,2MP)
- Digital microphone INMP441 MEMS

Operating System:

- Ubuntu
- windows

Leadsoc Technologies, Bangalore

Nov 2022 – Jan 2024

Project 1: Face Recognition with Tensor flow using Raspberry Pi

Description:

- The project aimed at developing a real-time facial recognition solution with a focus on efficiency and accuracy

- Implemented a robust Face Recognition system utilizing TensorFlow Lite and Google Colab for model training and testing and deployed it in Raspberry Pi Board.

Roles & Responsibilities:

- **Model Development:** Developed and optimized a TensorFlow Lite-based deep learning model for real-time face recognition.
- **Data Preprocessing:** Conducted preprocessing, including face alignment and normalization, ensuring high-quality training datasets.
- **Training and Testing:** Utilized Google Colab's GPU resources for efficient model training and conducted rigorous testing on diverse datasets.
- **Performance Optimization:** Enhanced model inference speed for real-time applications on edge devices through optimization techniques.
- **Documentation and Reporting:** Maintained detailed documentation and generated reports summarizing project progress, challenges, and solutions.

Sw/Hw Tools Used:

- Visual Studio
- Google Colab
- TensorFlow lib
- Raspberry Pi 4 Board
- I2C camera
- Ubuntu
- Python scripts

Project 2: Automated Violation fixes and reporting concerns at power planning stage of physical design.

Description:

- Implemented an automated solution for fixing violations and reporting concerns during the power planning stage of physical design.
- The project aimed to streamline the power planning process, ensuring compliance with design specifications and optimizing power consumption.

Roles & Responsibilities:

- **Input Processing:** Efficiently managed input files for streamlined project initiation.
- **Log File Generation:** Implemented a robust logging system to capture project details for analysis.
- **Log Parsing:** Developed algorithms to extract key information, identifying warnings and errors.
- **Issue Identification:** Systematically flagged and categorized warnings and errors for further analysis.
- **Reporting Mechanism:** Created detailed reports to facilitate quick decision-making and issue resolution.

Sw/Hw Tools Used :

- Visual Studio
- VNC server
- ICC2_Shell
- Gvim
- nedit

Education

2020-06 - **Master of Technology: Computer Science And Engineering**
 2022-11 University College of Engineering Kakinada (UCEK) - Kakinada

2016-07 - **Bachelor of Technology: Computer Science And Engineering**
 2020-09 Vikas Group of Institutions - Vijayawada