



AMAN KUMAR

Embedded System Designing || Embedded Hardware Design & Development || IOT || Machine Learning

Extensive experience in executing full life-cycle development projects; ramping-up projects within time, budget & quality parameters, as per project management & best practice guidelines

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Profile Summary

- Result-oriented professional with over 3 years of experience in **Embedded System Design & Development** including design of software & hardware test routines, design verification, functional testing and peer code reviews
- Hands on experience in system development and unit testing of embedded applications as well as with use the appropriate right tools for to complete the work with quick time duration
- In-depth understanding of system development life cycle including study of specifications, requirement gathering, designing, integration, testing, documentation and support
- Works on Different types of client and Cloud platform on IOT like **Thingspeak, Blynk, Hive-MQ, Mosquitto, PAHO MQTT, Node Red, AWS, Google Firebase, Adafruit IO**
- Worked on various time-to-market and critical projects for the design and development of Embedded System
- Represented the department for development of the technology roadmap for **Embedded and IOT division** by identifying desired future products, technology and Internet Protocol (IP) required to develop those products
- Exceptional communication, collaboration & analytical skills with proficiency in grasping new technical concepts quickly and utilizing the same in a productive manner

Technical Skills

Programming Languages: Embedded C, C Programming, Python Programming

Web Framework: Django, Flask

Cloud Platforms: Amazon (AWS), Google Firebase, Adafruit

AWS Services: EC2, S3, Lambda, CloudWatch

Modules: Numpy, Pandas, Matplotlib, SQLAlchemy, Keras, MySQL DB, Sklearn

IDE: PyCharm, Google Colab, Spyder, Jupyter Notebook, Keil, MPLAB, Arduino, Cube MX, XOD

Testing: Hypothesis Testing, t-test, Chi Square Test, ANOVA Test, Unit Testing

MCU: STM32FXX, LPC1768, MICROCHIP PIC 16F/18F, 89C51/52, NodeMCU, Raspberry Pi

IOT Module: GSM/GPRS(SIMCOM800), Wi-Fi (ESP8266)

Communication Protocol: UART, I2C, SPI

IOT Protocol: MQTT, HTTP

Peripherals: All basic embedded peripherals like ADC, DAC, UART, Timers, PWM, RTC, EEPROM

PCB Designing: Autodesk Eagle 9.6

Sensors Type: 4-20 mA current loop, PNP/NPN, PWM, Pulse, Voltage, Frequency

Wireless Modules: Bluetooth Low Energy BLE (4.0), X-Bee, RFID, Li-Fi, UHFID

Skill Set

Hardware Designing

Electrical System Designing

Failure Mode Effect Analysis

Embedded System Product Design

System Integration

Hardware Testing & Debugging

Product Designing

Technical Support

Service Delivery

Soft Skills



Change Agent



Team Player



Analytical



Collaborator



Communicator



Planner

Trainings

6 months training on Embedded System Designing from Vector India Pvt. Ltd., Bangalore in 2017



Work Experience

Since Jan'18 with Technologics Global Pvt. Ltd., Bangalore as Assistant Application Engineer

Jan'19 – Jan'21 with Technologics Global Pvt. Ltd., Bangalore as Application Engineer

Role:

Create Software that communicates with other devices through a variety of network and RF protocols.
Worked from initial product concept to prototyping, software programming and coding; member of the team that used peer review and peer-to-peer testing as part of the design and coding
Undertook software design and development, design of software test routines, design verification, functional testing and peer code reviews
Handled the design and implementation of software for embedded devices and systems, right from requirements to production and commercial deployment
Designed, developed, coded, tested and debugged system software; reviewed code and design; validated new product designs; supported Quality Assurance (QA) and optimized Input/ Output (I/O) performance; provided post-production support
Provided technical support in the design and development of embedded software applications; assisted in the development of new systems or enhancement of existing systems based on customer requirements Engaged in design, development, coding, testing and debugging of system software
Prepared technical specifications according to business needs; suggested improvements to existing system designs
Worked with the development, testing and implementation teams in completing projects within allotted budget and timelines; analyzed and troubleshoot system issues in a timely fashion

Significant Accomplishments:

Developed 4+ industrial projects in embedded domain; Trained 100+ candidates and guided 50+ projects in embedded systems



Education

- B.Tech. (Electronics & Telecommunication Engineering) from Trident Academy of Technology, Bhubaneswar / BPUT University with 8.37 CGPA in 2017
- 12th from CBSE with 64.2% in 2012
- 10th from CBSE with 8.2 CGPA in 2010



Academic Projects

- Industrial Security System using Raspberry Pi and IoT.
- Vertical Farming using NodeMCU and IoT.
- Home Security Pet Robot using Raspberry Pi and Artificial Intelligence.



Workshops

- Corporate workshop on **IOT** at (L&T), Coimbatore in 2017.
- **PCB Design & Development** Workshop at Annamacharya College Rajampet.
- 10 days' workshop on "**Internet of Things**" at Swarnandhra College of Engineering & Technology Andhra Pradesh in 2019.
- 1 Week Webinar on **Faculty Development Training Program** on "Machine Learning" at Kurukshetra University in 2020.



Personal Details

Date of Birth: 03rd February 1995

Languages Known: English, Hindi

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Annexure

Industrial Projects

Project Title: IP500 based BMS Network Riser Period: Feb 2020 - ongoing Technology: IP500 Gateway, CNX200 Dev Board, Raspberry Pi, Python, AWS EC2 Role: Firmware and Hardware Developer Team Size: 10	Description: In this project we were using IP500 Gateway & CNX200 Dev Board to connect different sensors and BMS devices to communicate with each other on a single server using Raspberry Pi.
Project Title: Smart Garbage Monitoring System using IOT Technology Period: July 2019 - November 2019 Technology: STM32F1XX (CORTEX-M3), ESP8266 Wi-Fi, VL53L0X ToF Distance Sensor, RTC, OLED Display, GSM/GPS Role: Firmware and Hardware Developer Team Size: 7	Description: In this project we were using STM32F1XX (CORTEX-M3) controller with ToF Sensor to measure the level of garbage and based on that update the status on server. The Garbage level can be monitored via webpage or mobile application. Each dustbin was equipped with GPS, so once it gets filled, alert will be sent to respective person along with the location.
Project Title: Electronically Operated Telescope Stand Period: Jan 2019 - June 2019 Technology: LPC1768 ARM Controller, Stepper Motor-NEMA 17, TB6600 Motor Driver, 4*4 keypad, 20*4 LCD, Digital Read Output (DRO) Role: Firmware Developer and Hardware Designing Team Size: 6	Description: In this project we were operating a telescope stand using embedded technology. In order to view the extra-terrestrial objects, the telescope has to move very precisely (in microns).
Project Title: Real Time Vehicle Monitoring System with Ignition Control Period: April 2018 - October 2018 Technology: STM32F446RE, GPS, GPRS Modem and various sensors Role: Firmware and Hardware Developer Team Size: 6	Description: It is GPS-based Real time Vehicle location & information system. System collects various parameters like vehicle location, fuel, engine temperature, battery health etc. in real time and sends the information to a Web Server. Customer can control the ignition & View the information of particular vehicle by login to android app.

(Freelancing Projects)

Project Title: Website Development Technology: Python 3.8, Django 3.0, AWS EC2 Role: Website Developer and Database Manager	URL: 4sigma.co.in
Project Title: e-Commerce web Development Technology: Python 3.8, Django 3.0 Role: Website Developer and Database Manager	Under Development

(College Projects)

Project Title: Determination of Specific Absorption Rate (SAR) in a Human Brain

Technology: COMSOL Multiphysics

Team Size: 4

Description: Using COMSOL Multiphysics the temperature increase of different parts of brain were analyzed. This will be helpful in manufacturing antennas of reduced SAR value. The maximum allowable SAR value in some countries is 2 W/Kg for 10g of body tissue but standard regulated by FCC (Federal Communication Commission) has the SAR limit of 1.6 W/Kg over 1g of body tissue. The SAR value decreases with increase in distance between the mobile phone and head.

Project Title: ZigBee based Calling Bell for Deaf and Dumb

Technology: 8051 Microcontroller, Zigbee, various Sensors

Team Size: 2

Description: The basic idea behind this project is to design a calling bell with a microcontroller-based switch arrangement. If any person will press the door bell, automatically the message will be generated through the ZigBee module to wrist band of deaf and dumb person and to the ringer, so that they will be able to know that someone is calling at the door.