



MUHAMMED ROSHAN P

Embedded system | Deep Learning | Automotive | Maker

A Technology enthusiast, Curious about Learning new Technologies and passionate about making something out of it. Capable of realizing any idea into quality product with minimal supervision. In Search of Challenging opportunity

where i can express and enhance my skills to change the world tomorrow. I will be best fit in research project on inter disciplinary domains.



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Skills and Expertise

- ✓ **Programming with**
C C++ Python C# PyQt SQLite
- ✓ **Protocols worked with**
SPI I2C UART CAN LIN
- ✓ **Automotive Standards worked**
UDS J2602
- ✓ Worked with various controllers ranging from 8051 to ARM/Power.
- ✓ **Code Coverage** analysis and **Unit testing** with Rapita tools.
- ✓ **Windows Application** development (Software Tools).
- ✓ **Linux** and **Free RTOS** programming.
- ✓ IOT and Wireless Sensor Network.
- ✓ **Data Structures and algorithms**
- ✓ **Computer Vision**
- ✓ **Machine learning algorithms.**
- ✓ **Deep learning**
 - Worked with various projects on classification, Image Segmentation, Pose estimation, localisation, Encoder and Decoder models, GANs, NLP etc.
 - Knowledge of sequence models like RNN, LSTM
- ✓ **AI Frameworks Familiar with**
Pytorch Keras Matplotlib OpenCV etc.
- ✓ **Cloud Deployment**(AWS Lambda) of DL models.
- ✓ Knowledge on **GIT, JIRA** etc.

Work Experience

Embedded system Engineer at DANLAW

11/2018 – Present

Joined as the first member in Automotive Electronics Solutions Team. Being the only employee in the team for more than one year completed one product and its supporting software all alone.

Recognition:- Received Danlaw Rising Star Award 2019

Projects

1. LC PRNDL Development

Technologies: C, LIN, I2C, UDS, J2602, C#, Arduino, Multi-Core System Design, Rapi Cover, Rapi Test.

PRNDL is a device used to indicate the current gear position in vehicles. It receives commands through LIN and control the LED s and its brightness accordingly. The product support various diagnostics, Calibration and Flashing of application and calibration table over LIN protocol.

- ✓ Responsible for complete systems and software design and its implementation (Software lead).
- ✓ Involved in project discussions with global team.
- ✓ Developed the product according to J2602 and UDS standard.
- ✓ Performed Code coverage analysis and Unit testing using RAPITA Tools.
- ✓ Drafted various documents such as software design document, High Level Design Document, Low level design document, Hardware software interface document and etc.
- ✓ Developed PRNDL **Flashing tool** which support multiple flashing protocols and authentication features in C#.
- ✓ Involved in planning of specification for calibration tool and end of line production tool.
- ✓ Software development for PRNDL **End of Line Testing Tool** (Arduino and sensor array).
- ✓ Supported various activities of validation team such as creating product test plan, electrical characteristic analysis and etc.
- ✓ Completed **Product Design Life Cycle**.

2. Environment Perception Module for V2X

Technologies: C, Linux, IPC, CAPI

- ✓ This module receives the Remote Vehicle information from the surrounding and classify them into different groups based on various parameter and store in particular structure for easy access.
- ✓ The module also updates the structure if the Remote vehicle parameters are changed
- ✓ It also facilitate fetching of object with given classification filtering criteria.

3. Door System Module

Technologies: Power PC, LIN, CAN, FreeRTOS

The door system module receives the information about door position and window position from touch screen and Bluetooth module and control the window and the door position accordingly.

- ✓ Requirement analysis and design in collaboration with global and local teams.
- ✓ Designed a prototype of Door System module.
- ✓ Responsible for software development for master(LIN) ECU and Vehicle- Bluetooth interface.

4. V2X Event Log Analysis

Technologies: Python

V2X device will generate Logs on occurrence of Events. The software will analyse the logs and classify them in to different classes. It also extract the informations from the messages and restructure them for easy access.

5. V2X RF Log Analysis

Technologies: Python

The RF logs generated by the V2X device are captured and classify them into various classes . The software will analyse the logs and classify them in to different classes. It also extract the informations from the messages and restructure them for easy access.

Co-Founder at Aproxy Developers

6/2018 – 10-2018

- ✓ Established a project guidance centre to support academic projects.
- ✓ Conducted various workshops on IOT, Embedded systems, PCB Design etc.

Resource Person at FABLAB College of Engineering Chengannur

01/2018 – 05/2018

- ✓ Mentor for Diploma, Btech, Mtech academic projects.
- ✓ Conducted Various workshop on Embedded system, IOT, PCB design etc.

Education

Btech Electronics and Communication from Cochin University of Science and Technology

GPA: 6.9

08/2013 – 05/2017

Active member in various Technical clubs and forums, worked on more than 3 dozen projects.

Projects

1. Peer to Peer Communication over Adhoc Network

Technologies: C, ARM Cortex M4, WSN

A self expanding wireless mesh communication system that enables communication within less infrastructure. Designed a mobile phone like system capable of sending and receiving text message, each node will also act as repeater to other nodes along with its operation.

2. Card less ATM using Biometrics

Technologies: C, PyQt, Beaglebone Black

ATM that uses fingerprint instead of ATM cards. Designed as a part of Texas Instruments Design India challenge2017.

3. Restaurant Automation system

Technologies: C, PyQt, Raspberry-pi, Arduino

The Guest can place the order via touch screen display and will be sent to kitchen, A robot will be delivering the food.

HSE Computer Science

Percentage : 86

SSLC from Technical School (Electronics)

Percentage : 82

Courses

Extensive Vision AI from theschoolof.ai

Advanced Deep learning course with special emphasis on computer vision. Spreads over three semester, each semester ends with one capstone project. Worked on more than two dozen projects.

Course Repo Phase1: github.com/roshantac/EVA4

Course Repo Phase2: github.com/EVA4-RS-Group/Phase2

Project Website: rsgroup.s3-website.ap-south-1.amazonaws.com/

Projects:

1. Monocular Depth Estimation and background removal using Deep learning (Capstone Project)

Technologies: Pytorch, Python, OpenCv, Image segmentation

Project URL: - github.com/roshantac/EVA4/tree/master/Assignment15/B

- Estimate Depth Heat map from 2D image.
- Extracts foreground from 2D image.
- Created a Dataset with 1.2 Million images from scratch.
- Created Customized model from UNET Architecture.
- Achieved results much closer to ground truth.
- The model is tested with various optimizing algorithms.
- Selected as **top 4 submission** in the course.

2. Medical image processing for multiple disease classification (On going project)

Technologies: Pytorch, Python, OpenCv, Image Classification, Grad Cam.

- Identify the disease based on Medical image data.
- Mark the region in the image which used for the identification.
- Create a model that can classify four diseases as first phase and expand to predict up to 14 diseases.

Certifications

- [Image Super Resolution from Coursera](#)
- [Generate Synthetic Image with DC GAN from Coursera](#)
- [Deeplearning from PadhAI](#)