# SYAM MOHAN


## MACHINE LEARNING ENGINEER, MSc. Artificial Intelligence

*Tel: +91 9446336220 | syammohan2103@gmail.com |https://www.linkedin.com/in/syammohan2103*
*Kerala, India | https://github.com/SyamMohan2103*


6+ years of experience working as a Machine Learning/AI Engineer. Passionate about developing innovative solutions using Data Science & Machine Learning to add tangible value to the business and stakeholders. Experienced in designing, developing and deploying deep learning models on cloud as well as on-premise servers.

## AREA OF EXPERTISE

• Python Programming • Machine Learning • Deep Learning • Frameworks(PyTorch/Tensorflow)
• Computer Vision Applications • ML model deployment • Data Processing • Cloud Architecture Design • AWS
• GCP • Robotic Operating System(ROS) • NLP • Multi-modal modelling

## EDUCATION

**Master of Science, Artificial Intelligence (3.8/4.0)** 2021 – 2022
*RMIT University, Melbourne, Australia*

- **Courses:** Artificial Intelligence, Machine Learning, Deep Learning, Practical Data Science, Programming Autonomous Robots, Cloud Computing, Intelligent Decision Making

**Bachelor of Technology, Electrical & Electronics (7.95)** 2012– 2016
*Cochin University of Science and Technology*

## PROFESSIONAL EXPERIENCE

**Machine Learning Engineer** Jan 2017 - 2022
*TATA Consultancy Services Ltd, Chennai, India*

- Spearheaded research and development within an Automation-Research Lab (Centre of Excellence) specialized in cutting-edge technologies like AI, IoT, Digital Twin, Machine Learning, and Blockchain.
- Successfully developed and deployed multiple ML models and data pipelines across standalone servers and cloud platforms (AWS and GCP) to deliver predictive analytics as a service.
- Proficient in Pytorch and Tensorflow for designing and developing deep learning algorithms.
- Proven expertise in data manipulation, exploration, and feature engineering utilizing RDBMS, NoSQL, and HDFS (Hadoop) systems.

## PROJECTS

**Amazon Cyber Innovation Challenge | Museum of London** 2022
*RMIT University, Melbourne, Australia*

- Collaborated with Amazon Australia to build a full-scale digital twin application on AWS
- Built Digital Twin of the Museum Artifacts and deployed an Interactive UI using Bootstrap, HTML, JS, D3.js
- The solution assisted building managers and shift engineers, remotely monitor the status of the museum artifacts by proactively predicting issues.
- Technology Stack - Python, Django, Apache, AWS, HTML, D3.js

**Object Detection and Segmentation | Nestle, Australia** 2022
*RMIT University, Melbourne, Australia - Contract*

- Worked with Nestle Australia to build an object detection and segmentation model to classify objects on the conveyor belt.
- Fine tuned (using transfer learning) a YOLO model in Pytorch to accurately segment the objects with 89% accuracy.

**Multi-modal Deep Learning| RMIT, Australia** 2022
*RMIT University, Melbourne, Australia*

- Developed a multi-modal deep learning model for detection of fake news.
- Combined image input through a EfficientNet encoder and Text input through a BERT Transformer Encoder using cross attention mechanism to accurately predict whether the given text description matches the details shown in the image input.
- Technology Stack - Python, Tensorflow

**Robocup Soccer Visual Referee Challenge| RMIT, Australia** 2022
*RMIT University, Melbourne, Australia*

- Placed 3rd in the international Robocup soccer challenge.
- Build and deployed a computer vision model to identify and rightly classify the signs shown by a robot referee for the Robocup soccer match.
- Technology Stack - Python, OpenCV, Pytorch, ROS

**Enterprise Digital Twin (for process monitoring and automation)** 2019
*TCS Digital - TwinX, Chennai, India*

- Part of a five member to team to file a patent and build a standalone product for AI based order journey monitoring.
- Build models to predict the journey of a Telecom order from Order Submission till Activation.
- Developed the application in Python Django Framework. Build ensemble models to accurately predict the completion time and order fallout scenarios. Deployed the service in AWS.
- Designed Architecture for machine learning solution deployment on cloud as well as on premise Systems. Dockerized the pipeline for environment agnostic deployment.
- Technology Stack - Python, Tensorflow, Django, MLOps, Apache, AWS, PostgreSQL, React, Splunk, Seaborn.

**Fraud Analytics and Predictive Modelling** 2017
*TCS Digital - TwinX, Chennai, India*

- Developed predictive (Machine Learning) models to analyze the Order to Activation data of a leading US Telecom company.
- Trained and tested a Random Forest Classifier to proactively identify fraudulent transactions in the data with 84% accuracy. Segmentation algorithms were used to localize fraudulent behaviour patterns.
- Deployed the application in Cloud-foundry Servers and served the predictions using a Flask API.
- Integrated live prediction using data streams from Kafka Queue and optimized the solution to enable shorter request-response time.
- Technology Stack - Python, Scikit-learn, Pandas, Numpy, Flask API, H2O.ai, Splunk, Kafka.

## RESEARCH

**RMIT University | Researcher** 2022

- Optimization of Computer Vision Algorithms using Region Proposal Networks and Deep Compression Techniques.

- Produced a Minor Thesis on the techniques that can make lightweight object detection models without compromising their performance.
- Conducted experiments using quantization and pruning to evaluate model performance on the MS-COCO dataset using PyTorch framework.

**LEARNBYRESEARCH | Researcher** Jun 2021 – Dec 2021

- Collaborated with a team of doctors to research on Bio-medical imaging using deep learning. Optimized a U-Net based semantic segmentation network to segment meningioma (brain cancer) images.
- Peer-review paper in Lancet.

## CERTIFICATIONS

- Machine Learning - IIT Kharagpur - NPTEL
- Internet of Things - IIT Kharagpur - NPTEL
- Python Data Structures and Algorithms - IIT Madras - NPTEL
- How Google Does Machine Learning (Coursera)
- Convolutional Neural Networks (Coursera)
- Building Generative AI Applications using Gradio (Deeplearning.ai)

## PERSONAL PROJECTS

**Generative AI**

- Build Prototype of Generative AI applications using Hugging Face models.
- Used Stable diffusion model and Gradio to build a text-to-image generative application.
- eg. Image captioning App, Diffusion based image generation from text

**Amazon Alexa App – Covid Vaccination Booking**

- Developed an Alexa App, to automate Covid Vaccination Slot Booking in India
- Technology Stack - Python, Alexa, AWS, API

**Google Cloud (GCP) – Music Storage Application**

- Deployed an End-to-end Google Cloud based web application to Search, Favourite and Play Music Content
- Technology Stack - Python, GCP, BigQuery