

PIYUSH KUMAR SINHA

Data Scientist, Technical Expert

Bangalore | +917795897148 | sinhapiyush2010@gmail.com



Summary

Have **9 years of experience** in the development and deployment of Artificial intelligence (Machine Learning, Deep learning) models using GPUs, cloud web services like AWS, and Real-Time Operating Systems (RTOS) like NPU (Neural Processing Unit) for various Industrial Automation and Automotive projects in companies like Schneider Electric, TechM, Siemens, Bosch, and HCL. Currently, working at Schneider Electric on topics of innovation and exploration with a particular focus on integrating AI to solve real-world challenging problems.

- Optimization of electric vehicle cell manufacturing process using AI.
- Generalization of Visual Inspection framework.
- Embedded AI, tinyML.
- Deep reinforcement learning application on PID and Multicarrier.
- Functional Safety - Person Detection and Tracking on Neural Processing Unit (Siemens proprietary hardware containing Intel Movidius Chip)
- Filed a patent for Alarm Prediction based on User Actions.
- Smart Listener for Industrial use case to detect the lip movements of the operator to understand his commands in a noisy environment.
- Machine Learning model for analysis and predicting software analysis comments relevance generated from the SWA tool.
- Machine Learning model for 8D data (Problem statement and analysis in 3X5 why sheet) which can predict similar 8D analysis given the problem statement and snapshot data from the cars running in the field.
- Bosch's in-house MLBase is a platform for creating a Machine Learning pipeline.

Work experience

Data Scientist, Technical Expert

2021-12 - Present

Schneider Electric

Working as innovation manager on various explorations and handling various customer projects at the product level. Managing R&D team to develop AI/ML solutions for the customers and internal projects.

Key Responsibilities:

- Building a generalized framework for visual inspection.
- Optimization of electric vehicle cell manufacturing process using AI.
- Embedded AI, tinyML.
- Deep reinforcement learning application on PID and Multicarrier.

Lead Data Scientist (Team Lead)

2021-02 - 2021-12

Tech Mahindra Limited

Work with the Center of Excellence (CoE) internal team to manage and develop prototypes for Computer Vision projects using the latest technologies in AI.

Key Responsibilities:

- Building PoC and deploying solutions for various TechM clients.
- Safety gear detection using computer vision.
- Remaining useful life prediction using sensor data and time series analysis.
- Document digitization and search with text analytics.
- BrainChip Meta TF packages for AKIDA processor.
- Stream Analyze engine usage to edge AI.

Data Scientist (Senior Software Engineer)

2018-11 - 2020-12

Skills

Artificial Intelligence

Have practical and industrial project experience in various sub-fields of AI using computer vision, machine learning, deep learning, etc to solve challenging problems like Functional Safety, Smart Listener, Alarm Predictions, etc. and deploy solutions on RTOS, Movidius, etc

Machine Learning

Proficiency in data pre-processing of structured (tables, databases) and unstructured data like (video, images). Linear regression, Logistic regression, Decision Trees, Random Forest, Naive Bayes, NLP (BoW-Bag of Words, TFIDF, Word2Vec, GloVec), etc.

Deep Learning

TensorFlow, PyTorch, Keras, Convolution Neural Networks (CNN), Long Short Term Memory (LSTM), Recurrent Neural Networks (RNN), GRU, etc.

Python

NumPy, Pandas, Keras, Matplotlib, Scikit-Learn, OpenCV, Flask, etc

Internet Of Things (IOT)

OpenVino Tool Kit, Myriad Development Kit (MDK), Neural Processing Unit (NPU), Intel Movidius Chip, etc.

IaaS and PaaS

Leveraging infrastructure and platform as a service.
AWS SageMaker, S3 bucket and EC2 instance for running optimized codes for GPU.
AWS Elastic Container Service (ECS) and Elastic Beanstalk (PaaS) for scaling, monitoring and updates.

Siemens Technology and Services Private Limited

Finding and developing Machine Learning use cases for Industrial Automation using Deep learning. Developed and deployed Functional Safety - Person Detection and Tracking on Neural Processing Unit (Siemens proprietary hardware containing Intel Movidius Chip). Filed patent on Alarm Prediction based on User Actions. Worked on a Smart Listener use case to detect the lip movements of the operator to understand his commands in a noisy environment. Got recognition and awards in the AIDT Expo hackathon of Siemens for displaying a demo of these use cases.

Key Responsibilities:

- Data extraction and Preprocessing using Python coding.
- Reading various research papers to understand and resolve key issues coming up while preparing the AI/ML model.
- Playing with different architecture to determine the suitable model and doing further hyper-tuning.
- Deploying AI models on Neural Processing Unit (NPU) using Myriad Development Tool Kit (Intel and Siemens proprietary hardware and software containing Intel Movidius chip).
- Using OpenVino Tool Kit to create compatible blobs (Neural Network binary files) for the hardware (NPU).
- Using AWS services for uploading data on an S3 bucket and using different EC2 instances for running the optimized code on GPU as well as Microsoft Azure to register and deploy the model.

Machine Learning Engineer (Software Product Developer) 2015-06 - 2018-11

Robert Bosch Engineering and Business Solutions Private Limited

Finding and developing Machine Learning use cases in the Automotive domain. Engine ECU Software development, testing, and integration.

Key Responsibilities:

- Finding and developing Machine learning use cases to automate processes at the software level. (Eg. Software Analysis comments relevance, ECU reset, Test Specifications extraction, etc.)
- Mainline integrator, Software modules continuous integration, and development for Engine ECU.
- Have experience on deputation to Germany for final tests of series software of D4 cylinder car of JLR.

Software Developer 2013-08 - 2015-05

HCL Technologies Ltd

Service Master Tool and Cluster ECU software development and testing for OBD(Onboard diagnostic tool) used by JCB manufacturing company for their various products like Backhoe loader, Excavators, etc.

Key Responsibilities:

- Service Master tool development (Setup, diagnostics, data logging, firmware flashing, service history).
- Cluster development and testing by understanding OBD (onboard diagnostics) requirements.
- Working on the JCB machines to understand their requirements and tool development accordingly.
- Day-to-day interactions with clients, vendors, and dealers to resolve their issues by investigating and analyzing defects to get them fixed.

Education

Bachelors in Engineering (Electronics and Communication) 2008 - 2012

Annamalai University, Faculty of Engineering And Technology (FEAT)

Projects using Microsoft Azure containerization like Alarm Prediction

Blockchain

Blockchain development, Smart Contract

Embedded systems

Infineon, Arduino, Raspberry pi, Engine ECU, Cluster ECU(OBD), LabCar, Cancase, UDE debugger, etc.

Domain

Industrial Automation, Automotive

Languages

Python3, Embedded, Shell, CSS, etc

OS

Linux (Ubuntu), Real Time Operating Systems (RTOS), Windows.

Tools

TensorFlow, Jupyter Notebook, OpenVino, AWS, Docker, Docker Compose, Anaconda, Spyder, Sublime, GitHub, Microsoft Azure, WinSCP, Putty, Matlab, Octave, RQ1, SDOM, Continuous Integration, INCA, ECUTest, CANalyzer, SVN.

Hardware

Lambda Titan X GPU's, RTOS (Intel Movidius stick, Myriad 2 accelerator, Neural Processing Unit, Infineon, Arduino, Raspberry4) Safety PLC, Engine ECU, Cluster ECU(OBD), LabCar, Cancase, UDE debugger etc.

LinkedIn

<https://www.linkedin.com/in/sinhapiyush/>

- Completed B.E. in Electronics and Communication Engineering with OGPA of 8.36.
- 1st prize with scholarship in National Level Paper Presentation on the topic "BLUE EYE TECHNOLOGY".
- 1st prize in "CHESS CHAMPIONSHIP" and "DIRECTOR OF THE SECTION" for consecutive years.

Certifications

- AiU - Certified Tester in Artificial Intelligence (CTAI) by brightest which is a global ISO 17024 and ISO 9001 certified certification body, headquartered in Berlin.
- Certification in Machine Learning by Stanford University on Coursera.
- Specialization in Deep Learning by deeplearning.ai on Coursera by Andrew Ng.