

# ABC KUMAR SINHA

## Data Scientist, Technical Expert

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### Summary

I have around 10 years of experience in the development, deployment, and management of teams for Artificial intelligence (Machine Learning, Deep Learning, Deep Reinforcement Learning) projects involving GPUs, cloud web services like AWS, and Real-Time Operating Systems (RTOS) having AI accelerators like NPU (Neural Processing Unit) for various Industrial Automation and Automotive projects in companies like Schneider Electric, Siemens, Bosch, etc. I am currently working at Schneider Electric on topics of innovation and exploration with a particular focus on integrating AI to solve challenging real-world problems.

- Democratization of Visual Inspection framework.
- The deep reinforcement learning application for PID Auto-tuning on drives. 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 an innovation manager on various explorations and handling various customer projects at the product level. Managing the R&D team to develop AI/ML solutions for customers and internal projects.

##### Key Responsibilities:

- Building a democratized visual inspection framework.
- The deep reinforcement learning application for PID Auto-tuning on drives.

#### 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.

#### Data Scientist (Senior Software Engineer)

2018-11 - 2020-12

##### 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

### 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. Projects using Microsoft Azure containerization like Alarm Prediction

#### Embedded systems

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:

- 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 Took Kit to create compatible blobs (Neural Network binary les) for the hardware (NPU).
- Using AWS services for uploading data on an S3 bucket and using di erent 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 Speci cations extraction, etc.)
- Mainline integrator, Software modules continuous integration, and development for Engine ECU. Have experience on deputation to Germany for nal tests of series software of D4 cylinder car of Jaguar Landrover (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 loaders, Excavators, etc.

#### Key Responsibilities:

- Service Master tool development (Setup, diagnostics, data logging, rmware ashing, service history) and testing by understanding OBD (onboard diagnostics).

## Education

Master of Science in Machine learning and AI (Pursuing)

2022 - 2024

Liverpool John Moores University, United Kingdom

Executive PG Programme in Machine Learning & AI

2022 - 2023

International Institute of Information and Technology Bangalore (IIITB)

Bachelors in Engineering (Electronics and Communication)

2008 - 2012

Annamalai University, Faculty of Engineering And Technology (FEAT)

- AiU - Certi ed Tester in Arti cial Intelligence (CTAI) by brightest which is a global ISO 17024 and ISO 9001 certi ed certi cation body, headquartered in Berlin.
- Certi cation in Machine Learning by Stanford University on Coursera.
- Specialization in Deep Learning by deeplearning.ai on Coursera by Andrew Ng.

## 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, In neon, Arduino, Raspberry4) Safety PLC, Engine ECU, Cluster ECU(OBD), LabCar, Cancase, UDE debugger etc.

## LinkedIn

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

Created with  VisualCV

## Certifications

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

