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| MD Farhan  Senior Machine Learning Engineer / Computer Vision / Data Scientist  +91-9555696111 | farhan3125@gmail.com | Bangalore, India |

## PROFESSIONAL SUMMARY

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* Specialization in **AI and Machine learning algorithm**.
* Overall 9+ years of experience and 6+ years of hands-on experience in **Data Science/ Computer Vision /** **machine learning/deep learning** techniques using python.
* Part of **Research AI Core Product team in GE Research** which provide AI/ML based solutions to various business across GE.
* Work on ideas and solve complex business problem with AI and cutting-edge technology.
* Professional experience in full development Cycle experience as a Product developer. Expertise include **Computer Vision, Natural Language Processing**. Utilized and deployed solutions with **NVIDIA Jetson, Xavier, and IP cameras**.
* Worked on Hugging Face (Sentence Transformers). Utilized pretrained models like BERT,ChatGPT and GPT4ALL etc.
* Build pipeline on Langchain and Chainlit. (Applied Prompt Engineering)
* Have knowledge and understanding of Generative AI and foundational models.
* In-depth understanding of transformer architecture and Large Language Models (LLMs).
* Worked on fine tuning of LLMs.
* Having experience on Classification (Naive Bayes, Decision Tree, Random Forest, SVM, KNN, SVC).
* Have worked on Deep Learning techniques (**Tensor Flow 2.0 and above, Keras, LSTM**). Data Extraction from various source system (NoSQL database, Elastic, etc.).
* **Exploratory Data Analysis** (Univariate, Bivariate, Multivariate analysis).**Data Preparation, Feature Engineering and visualization**.
* Hands on experience in **GoLang** and **PYTHON** (Pandas, Numpy, Scikit-lean, SciPy).
* Hands on and experience on Big data technologies like spark for data fetching and PySpark for Machine learning algorithm.
* Having experience in using IDE’s such as Pycharm, Visual Studio, Data Brick ,Anaconda.
* Build API’s using GoLang and Flask (backend). Used POSTMAN for testing. Used Azure and AWS for product development and deployment. Using **Bit Bucket and GITlab** for code check-in. Have Knowledge and worked on **Container, Kubernetes, Rancher, Jenkins, CI/CD**.
* Knowledge on **Data Structure and Algorithm**. Worked on **System Design**.
* Experience in AGILE based product development (Jira).

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## TECH STACK

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| **AI Skills** | Computer Vision, Image processing, Natural Language Processing (NLP), Machine Learning, Deep Learning, Algorithms, Transformers, LLMs, LangChain , Chainlit |
| **Back End** | Python, Golang, Microservices, APIs |
| **Data Stores** | MySQL, Oracle, PostgreSQL, SQL Server, Elastic |
| **Language** | Python, Golang, C++ |
| **Operating Systems** | Linux Red Hat, Ubuntu, Mac OC, Windows 10, Windows Server |
| **Edge Computing Devices** | Nvidia, Jetson, Xavier, IP camera, PTC, Sensors (temperature, RPM etc.). GPU’s |
| **Deployment** | Docker, Container, Kubernetes, Rancher, Jenkins, CI/CD, Gitlab, Bit Bucket |
| **Cloud** | Azure, AWS |

## EXPERIENCE

**Senior ML Researcher | GE Research| Bangalore, India 2021 – Ongoing**

**AI System for Track and Asset Management**

AI ( Computer Vision ) enabled system to track the movement of trains in a Yard. This system is also locating and ensuring the presence of multiple assets maintained by the stakeholders. An overall AI enabled management system of a YARD. Working with PhD Researcher from MIT with a team size of four. Scaling this idea to many Yards. Utilized the concepts of quantization and pruning on building an efficient system which is fast enough to track high-speed moving trains.

**Role**:

* Working on Building automated BOT which detects the position of elements from the Railway line.
* Detection, classification and tracking of objects in live videos. Identification of static object positions.
* Using Computer Vision and Deep Learning techniques (CNN) to achieve the goal.
* Used detection Algorithms such as YOLO V3, V5,V8 etc.
* Used YolactEdge for building the segmentation model.
* Developed algorithm for counter modelling using the concept of centroid and some efficient algorithm like Kalman Filter with KCF. Applied Tensor RT for improving model performance.
* Designed and implemented the GPS system for building Vector Space (Latitude, Longitude and ECEF coordinates) for navigation of BOT and elements.
* Implemented tracking algorithms like Kalman Filter.
* Worked on the perception system ( Lidar , radar and inertia sensors.)
* Developed and explored some innovative ideas and solutions for data annotation.
* Used Jetson Xavier and some advance camera (like PTC) for detection of fast-moving objects to capture and process the image.
* Build End to End pipeline. Developed API's and microservices (On Golang).
* Developed algorithm for live video quality check and detection algorithm for change in camera orientation.
* Worked on data labelling with tools like super annotate and labelbox.
* Used Postgres and AWS for hosting the product on cloud.

**Senior ML Engineer | GE Research | Bangalore, India 2023 – On going**

**Research into internal GPT solution on Transport Data**

A unique platform integrated with cutting edge technology like, Hugging Face, DistilBERT, Elastic etc. to provide a single platform for Search and Chatbot for QnA. This master BOT was the front-End interface which was built on Intelligent Interface Architecture. The concept was to create and intelligent system to query a keyword or a phrase and fetch the most relevant information or document form the Knowledge Base.

**Role:**

* Leading a team of 4 for research in Large Language model which would be an internal solution to the organization.
* Worked on building the end-to-end Machine Learning life cycle pipeline which involves Data collection of client data, perform Data pre-processing, transformations, Model development and deploying the AI models into production.
* Used the Hugging face models ( S-Bert, GTR, t5 ) for semantic matching.
* Used opensource GPT models and fine-tuned it on internal data.
* Used Langchain for prompt engineering. Used Chainlit for building the interface.
* Fine-tuned the foundational model for semantic search.
* Worked on Vector Database like chroma DB and pinecone.
* Used some new techniques like Data Augmentation to produce new data.
* Utilizing the transformer architecture to build an internal LLMs which will be trained only on transport data.

**Senior ML Engineer | Unisys | Bangalore, India 2020 – 2021**

**IntelliServe Product Development**

Idea of handling multiple IT service request with good accuracy score and in an efficient way. Worked into core AI Research team of Unisys with some amazing people. The goal was to reduce the effort and timeline to solve any IT service ticket. Lot of time was invested into understanding and allocating the request to correct resolver group. Applied and patent the idea of efficient routing of request with calibrated classifier and integrating it with confidence score.

**Role:**

* Worked on IntelliServe product, an Enterprise Personal Assistant (EPA) powered by AI. I was majorly working on building the AI models.
* Worked on building the end-to-end Machine Learning life cycle pipeline which involves Data collection of client data, perform Data pre-processing, transformations, Model development and deploying the AI models into production.
* Used SEQ2SEQ , LSTM and BiLSTM concept to train the model.
* Developed back-end using Flask API(Python) an Intelligent AI/ML Automation Web tool which involves performing the major ML life cycle processes, from Data Ingestion to Modeling leveraging the Azure Cloud services in back-end.
* My work was completely on Microsoft Azure Cloud environment, and it involves Text Analytics, Natural Language Processing (NLP), Neural Networks, Machine Learning, PySpark.
* Worked on deployment of the model. Used Docker Hub, Kubernetes, Rancher, Jenkins (CI/CD) to achieve the same. WSO2 for security and authentication.
* Used some new techniques like Data Augmentation to produce new data.

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## EXPERIENCES

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**Service Engineer | Microland | India Jan 2012 – Jan 2014**

**Software Engineer | Future Focus | India July 2015 - Feb 2016**

**Associate-Projects | Cognizant| India March 2016 – June 2018**

**Senior Software Engineer | Tech Mahindra | India July 2018 – Mar 2020**

**Senior AI/ML Engineer | Unisys | India March 2020 – July 2021**

**Senior Machine Learning Engineer | GE Transportation (Wabtec Company) | India July 2021 – till date**

## EDUCATION

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**MS** in Artificial Intelligence from Liverpool University (UK). | DEC-2020 - DEC 2022

**B-Tech** (Computer Science Engineering) | Jawaharlal Nehru Technological University (Hyderabad)| Hyderabad, India 2007 – 2011

**Postgraduate** (AI)| IIIT Bangalore | Bangalore, India

## CERTIFICATIONS

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**Azure Certified** (CRED ID- 990640200 ) | **AWS Certified** (CER ID - D7JNSEFLPEEEQY5E )

## ADDITIONAL ACTIVITIES

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Mentor to Edison Program | GE | Bangalore, India

Have set up lab and course for adaptation and awareness of AI technology in organization.

Filed 2 patent. Published whitepaper on computer vision and transformer architecture.

Enthusiastic in Quantum Computing.

## PROFILES

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