

Vitthalsing Gushinge

Pune, India

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Personal Profile

Machine Learning Engineer skilled in developing AI/ML products with overall **9 years of experience** creating machine learning models and retraining systems and building data science prototypes to **production-grade solutions**. Complex problem-solver with analytical and driven mindset. Dedicated to achieving demanding development objectives according to tight schedules while producing impeccable code.

Work Experience

NIQ

Pune, India

Lead Machine Learning Engineer

Jun 2023 - Present

- As a Lead Machine Learning Engineer on the GenAI Conversational System project, I was responsible for designing and developing a modular, scalable **GenAI Agentic system** for a client team. The system automated data extraction from internal databases to resolve client queries, reducing resolution time from 7 days to 1 day
- To ensure extensibility, I developed a modular architecture using **LangChain's LangGraph**, allowing the chatbot to dynamically acquire new skills and improve over time. This facilitated addressing a broader range of complex queries.
- I built the backend with **FastAPI**, implementing **REST API** endpoints and **WebSockets** for real-time communication. To maintain enterprise-level security, I integrated **Azure Active Directory** with JWT-based authentication.
- I collaborated closely with front-end engineers to deploy the system using the **Angular** framework, ensuring smooth interaction between the chatbot interface and backend services.
- I led the deployment process using **Docker**, ensuring scalability and ease of integration into the client's environment. The system was secured and deployed on **Azure Cloud**, following best practices for cloud architecture.
- The system reduced the reliance on internal database experts and significantly improved the client engagement experience by automating query responses, which previously required manual input.
- AI Skills:** Machine Learning, Natural Language Processing, Generative AI, Conversational AI, Large Language Models (LLM), LangChain, LangGraph, FastAPI, OpenAI, Azure AD, JWT, WebSockets, Model Deployment, Python, Autogen, CrewAI
- Soft Skills:** Leadership, Team Collaboration, Project Management, Time Management, Communication
- Collaboration Tools:** Git, Azure DevOps, JIRA, Confluence
- Cloud Platforms:** Azure, Docker, FastAPI, Angular

NIQ

Pune, India

Senior Machine Learning Engineer

Jun 2021 - Jun 2023

- As a Senior Machine Learning Engineer on the Flyer Automation project, I played a key role in testing various hypotheses, conducting proof-of-concepts, and building production models. I successfully developed three production models, including two **Computer Vision** models and one **Natural Language Processing (NLP)** model.
- To improve the accuracy of product categorization, I utilized **Google Vision API** to extract words and their bounding boxes from product images, which served as input data for the NLP model. Using **spaCy**, I built an **NER** model that effectively extracted key information from product descriptions, achieving an F1 score of **94%** on the test set.
- To improve the accuracy and performance of the models, I created ground truth data for NLP and object detection models using the **Doccano** and **CVAT** annotation tools. This involved managing the data upload, creating workflows, and training annotators on how to complete annotation jobs.
- I also built a product category model using **BERT**, which significantly improved the accuracy of product classification, achieving an F1 score of **96%** on the test set and enabling more efficient processing of product data. Additionally, I built and fine-tuned an **object detection model** using **Yolov7 pyTorch model**, which achieved an accuracy of **85%**. The training process involved optimizing various hyper parameters and data augmentation techniques to improve the model's performance.
- To ensure seamless integration with the existing workflow and easy deployment to the cloud, I deployed the production models using **FastAPI** and **Docker**. Model were trained, monitored and served **Azure ML** and **MLFlow**
- Overall, my contributions were critical in ensuring the successful completion of the Flyer Automation project within the deadline and delivering high-quality models that significantly improved the efficiency of the flyer automation process. Additionally leading the team on this project and guiding team on other modules in the project.
- AI Skills:** Machine Learning, Computer Vision, Natural Language Processing, Deep Learning, Image Processing, Object Detection, Data Annotation, Model Deployment, Python, PyTorch, spaCy, BERT, Yolov7, FastAPI, Docker, NumPy, OpenCV, Pandas, Scikit-learn.
- Soft Skills:** Teamwork, Time Management, Communication, Presentation skills.
- Collaboration Tools:** Git, BitBucket, Confluence, JIRA, Jenkins
- Cloud Platforms:** Azure, Google Cloud

Amazon

Pune, India

Data Analytics Engineer

Sep 2015 - Jun 2021

- Collaborated with internal and external stakeholders to optimize data sourcing pipelines and verify data quality.
- Performed preemptive resolution of technical issues by utilizing detailed knowledge of ongoing processes and policies.
- Managed customer experience metrics, tracking deficits in service feedback and addressing required changes with appropriate personnel.
- Acted as liaison between clients and technical associates, translating complex ideas into easy-to-understand explanations.
- Developed polished visualizations to share results of data analyses. Improved data pipelines. Compiled, cleaned and manipulated data for proper handling.
- **Technical Skills:** Tableau, Amazon QuickSight, Python (Programming Language), SQL

Education

Mumbai University

Mumbai

Bachelor of Engineering (Computer Engineering)

Jul 2011 - Jul 2015

Great Lakes Institute of Management

Pune

Post Graduation AI/ML

Nov 2018 - Nov 2019

Languages

English | Hindi | Marathi