Vaishnavi Gawale

Software Engineer

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SUMMARY

Software Engineer with over 5 years of experience in building scalable backend systems, automating data pipelines, and delivering end-to-end machine learning solutions. Proficient in Python, MySQL, and Shell scripting, with strong expertise in predictive modeling, computer vision, natural language processing, and deep learning. Experienced in software development with cloud technologies and big data platforms. Skilled at translating business requirements into technical architectures a collaborating with cross-functional teams and delivering high-impact solutions that enhance system performance and decision-making accuracy.

SKILLS

Programming & Scripting: Python, C, C++, MATLAB, Bash/Shell scripting
Libraries and Frameworks: Pandas, NumPy, Scikit-learn, TensorFlow, PyTorch, Keras, OpenCV.
Machine Learning & AI: Predictive Modeling (Linear/Logistic Regression, Time Series, Forecasting), Bayesian Methods, Decision Trees, Random Forest, SVM, K-Means Clustering, K-Nearest Neighbors (KNN), Naive Bayes, XGBoost, Sentiment Analysis, NLP (Spacy, NLTK, Transformers), LLMs (OpenAI, Hugging Face, LangChain), Deep Learning (CNN, RNN, LSTM), RL, AutoML, Model Interpretability (SHAP, LIME, XAI)
Statistical Modeling: Hypothesis Testing (T-test, Chi-Square, ANOVA), A/B Testing, Experimental Design, Bayesian Inference, Statistical Significance, Time Series Analysis, Regression Models
Databases: MySQL, PostgreSQL, SQL Server, Oracle, MongoDB, BigQuery, Snowflake
Data Engineering & Pipelines: ETL, Data Cleaning, Feature Engineering, Apache Airflow, Spark (PySpark), REST APIs, Data Integration
Data Visualization & BI Tools: Tableau, Power BI, Plotly, Matplotlib, Seaborn
Cloud & Big Data Platforms: AWS (S3, EC2, SageMaker), GCP (BigQuery, Vertex AI), Azure ML, Databricks
DevOps & Deployment: Git, Docker, Kubernetes, MLflow, MLOps, CI/CD, FastAPI, Flask, Streamlit
Project Management & Methodologies: Agile/Scrum, JIRA, Stakeholder Communication, Cross-Project Management

EXPERIENCE

Clinical and Translational Research Center, USA | Research Scientist Intern — Jan 2025 - Present

Project - CEST MRI-Based Biomarker Development for Early Detection of Alzheimer's disease

- Developed an automated CEST MRI pipeline using Python, MATLAB, NumPy, OpenCV, and scikit-image for APT signal correction, quantification, and regional analysis of amyloid-beta accumulation in the brain.
- Applied machine learning and deep learning models for brain region classification and image segmentation, enabling comparison with PET data to establish CEST MRI as a potential biomarker for Alzheimer's diagnosis.

Vegayan Systems, India | Software Engineer II — Oct 2022 - Jan 2024

- Engineered and deployed machine learning models to predict network traffic for leading telecommunications companies, achieving a 25% improvement in accuracy and operational efficiency.
- Conducted Exploratory Data Analysis (EDA) of network traffic data to identify key patterns and features, enabling better forecasting and proactive decision-making.
- Implemented feature selection techniques and optimized hyperparameters to enhance model performance, utilizing frameworks like scikit-learn and TensorFlow.
- Applied advanced data cleaning and preprocessing techniques using Python libraries such as NumPy and Pandas, significantly improving data quality and ensuring consistency across multiple datasets.
- Designed and automated ETL pipelines to handle large-scale datasets, reducing processing time by 20%.

Vegayan Systems, India | Software Engineer I — Aug 2019 – Sept 2022

- Demonstrated proficiency in Data Structures, Python, Linux Shell Scripting, and SQL databases to automate workflows and to generate complex data reports, expediting reporting processes by 40% and supporting critical decision-making.
- Developed dynamic scripts and optimized SQL queries to extract, transform, and load (ETL) information from large relational databases, ensuring high efficiency in data retrieval and analysis.
- Designed and implemented a responsive web interface and RESTful APIs in Java to enable advanced search functionalities and improve user experience.
- Collaborated with cross-functional teams for software design to integrate the web application and enhanced system performance by 30% through optimization of backend algorithms and effective API architecture.

PROJECTS

News Recommendation System using Reinforcement Learning

- Designed and implemented a real-time news recommendation system using DQN and A2C on the MIND dataset including ensemble tokenization, named entity recognition (NER), lemmatization, and POS tagging. Utilized vector embedding (TF-IDF, GloVe) and context-aware features for user-article representation, enabling accurate content personalization and long-term engagement prediction.
- Achieved up to 9% click-through rate (CTR) by optimizing article selection through reinforcement learning, significantly outperforming baseline recommender models.

Credit Default Prediction and Risk Assessment

- Developed predictive models (XGBoost, ROC AUC: 0.779) to assess default risk across 30,000+ credit accounts, incorporating feature engineering, class imbalance handling (SMOTE), and cross-validation to improve model performance.
- Delivered actionable insights using SHAP values, ROC/AUC curves, and automated dashboards built with Plotly, enabling stakeholders to make data-driven decisions and proactively mitigate risk.

EDUCATION

Master of Science in Artificial Intelligence | University at Buffalo SUNY, Buffalo, New York, USA
Master of Technology in Computer Engineering | University of Mumbai, Mumbai, India
Bachelor of Engineering in Computer Science & Engineering | BAMU, Aurangabad, India