Pradyumn Pundir

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SKILLS

Programming Languages: JavaScript, Python, Java, HTML, CSS, YAML

Libraries, Frameworks, Runtimes: Node.js, Express, Bootstrap, Java Spring Boot

Databases: MySQL, Mongo DB, Firebase

Tools & Other Skills: Docker, Docker Compose, Linux (Fedora), Nginx, Gitlab, OpenShift, Machine Learning, Deep Learning, Natural Language Processing, Large Language Models, Flask, Data Version Control

EXPERIENCE

Software Developer at *Barclays, NJ* **July 2024 - Present**

- Developed a multithreaded Python application to efficiently process large volumes of risk factor data and compute portfolio P&L, resulting in significant performance gains and reduced processing time
- Implemented smart caching mechanisms to store intermediate results, accelerating repeated computations and improving overall system responsiveness during high-volume data analysis
- Built and optimized **GitLab** CI/CD pipelines using **Docker**, reducing deployment times by **30%** and improving the efficiency of microservices development
- Containerized applications using Docker and deployed them on **OpenShift** for scalable and reliable microservices architecture

Research Analyst at *Stevens Institute of Technology, NJ* **Feb 2024 – July 2024**

- Built an **iOS** mobile and watch app to track participants' heart rates under controlled conditions, ensuring data collection only during optimal network availability
- Designed a dynamic web interface using **WebSocket's** to display heart rate data in real-time, storing and managing data efficiently in MongoDB
- Developed an AI chatbot leveraging **OpenAI** APIs, employing custom prompt engineering to fine-tune model outputs for domain-specific business use cases and integrating contextual response generation
- Created a responsive frontend using **React.js** and CSS, with a **Python Flask** backend, deployed on **AWS** and containerized with Docker for scalability and reliability

Software Developer Intern at Barclays, *NJ* **June 2023 – Aug 2023**

- Built a hybrid recommendation system using **context based** and **collaborative filtering** allowing the infrastructure and the technology to team collaborate effectively covering 3000+ employees
- Built a high-performance, high-scalable, and effortless web portal using flask, containerized it using docker, implemented continuous testing, integration & deployment. The web portal resulted in improved employee interaction & network growth by **36%**
- Collaborated with stakeholders, quality assurance, and other software development teams to align with goals & gather requirements across 3 different regions, Managed the data science team to ensure model testing, validation, collaborative practices, improved code quality, and optimized procedures demonstrating effective project management

EDUCATION

Master of Science in Computer Science at *Stevens Institute of Technology, NJ* 3.9 GPA, **December 2023**

RESEARCH AND PUBLICATIONS

- **Towards a Multimodal System for Precision Agriculture using IoT and Machine Learning:** Discovered methods to improve crop productivity with less human intervention. Implemented diverse machine learning algorithms such as Random Forest, LGBM, and KNN, Pre-Trained CNN models such as VGG16, Resnet50, and DenseNet121. Published in IEEE ICCCNT 2021, IIT Kharagpur, INDIA
- **On CI/CD for Automated Deployment of Machine Learning Models using MLOps:** Study provides a more in-depth look at machine learning lifecycle as well as key contrasts between DevOps and MLOps. Includes tools and methodologies for executing the CI/CD pipeline of machine learning frameworks. Published in IEEE AIKE 2021, Laguna Hills, CA, US

PROJECTS

- **Body Fat Prediction with ML and MLOps:** Built a machine learning framework using algorithms like Random Forest, Decision Tree, Extra Trees, and KNN to predict obesity, body weight, and fat percentage, optimizing accuracy with hyperparameter tuning. Deployed a user-friendly Python Flask web app on Azure with CI/CD pipelines, leveraging DVC and MLflow for model performance tracking. The research project was published in MIPRO 2021, Optija, Croatia
- **Symptom Extraction and Linking from Vaccine Adverse Event Reports:** Implemented advanced NLP techniques, including sequence labeling and state-of-the-art Named Entity Recognition (NER), to extract symptoms from Vaccine Adverse Event Reports (VAERS), achieving 97% accuracy using Logistic Regression. Designed and optimized a comprehensive data preprocessing pipeline to address language variability and enhance model robustness. Demonstrated expertise in developing high- performance models for vaccine adverse event identification and linguistic data analysis.