USHA SREE PALLEBOYINA
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PROFESSIONAL EXPERIENCE

Student Research Assistant || University of Florida || *Gainesville, Florida* **July 2024 – Present**

- Developed a full-stack simulation and analytics platform using React, Flask, FastAPI, and Streamlit, enabling researchers to configure experiments, run large-scale neural models, and visualize results through intuitive, real-time interfaces.
- Engineered optimized backend workflows in Python (NumPy, SciPy, MySQL) to process high-volume time-series data, automate experiment tracking, and ensure reproducible simulation execution.
- Created interactive visual analytics and dashboards using Matplotlib, Seaborn, and Pandas to translate neural metrics into clear trends and insights, helping to understand the relationship between stability, turbulence, and chaos in neural systems
- Built intelligent ML-driven pipelines for computing PSD, entropy, and phase-transition metrics, converting raw simulation data into interpretable insights.
- Implemented dynamic, real-time dashboards using Plotly.js, WebSockets, delivering continuous metric updates and reducing analysis turnaround time by 35 %.
- Containerized and deployed the platform with Docker and AWS EC2, ensuring scalable, multi-user access and standardized cloud-based research environments.

Programmer Analyst || *ME solutions, India* ***Mar* 2023 – Dec 2023**

- Led the end-to-end backend development of a Wholesale Management Portal using Java, Spring Boot, and microservices, streamlining investment and tax data retrieval through secure APIs.
- Developed an event-driven notification system with AWS Lambda, SQS, and SNS to automate real-time alerts and reminders, enhancing client communication efficiency by 60% and Integrated performance monitoring through ElasticSearch and Kibana dashboards to proactively identify and resolve latency issues, ensuring high availability in a distributed system.
- Coordinated modular feature rollouts with Drupal and version-controlled deployments, enabling seamless feature toggling and reducing release turnaround time by 35%.

Software Engineering Intern || *ME solutions, India.* **Aug 2022 – Mar 2023**

- Developed secure RESTful services using Spring Boot and Layer 7 API Gateway to handle authentication, account creation, and data aggregation, strengthening backend security and user access control.
- Integrated LDAP authentication and role-based access policies to safeguard sensitive user data and enforce enterprise-level compliance standards.
- Engineered report-generation services with iText7 to create downloadable PDF and Excel summaries, improving user visibility into investment and tax records.
- Optimized backend performance through refactored API logic and caching, reducing response time and enhancing overall user experience.

EDUCATION

M.S. Computer and Information Science and Engineering, University of Florida, Gainesville, Florida. **Jan 2024 - Jan 2026**

Relevant Coursework: Data Science, Data Engineering, Analysis of Algorithms, Software Engineering, Python, Natural Language programming, Advanced Data Structures.

Vignan Lara Institute of Technology & Science, India, *B.TECH.* **Aug 2019 - May 2023**

Relevant Coursework: Data Structures, Computer Networks, Python, Software Engineering, C programming, Java, Database management, Machine Learning, Artificial intelligence, Mean stack technologies.

TECHNICAL SKILLS

Programming & Frameworks: Python, Java, JavaScript (React.js, Node.js), Flask, FastAPI, Spring Boot, Streamlit, TypeScript, HTML5, CSS3,R
Machine Learning & AI: PyTorch, scikit-learn, LangChain, OpenAI API, spaCy, Transformers, XGBoost, Gradient Boosting, Random Forest, Deep Learning, Regression, Classification, Clustering, NLP, Feature Engineering, Model Evaluation, MLflow, Analytical Skills, Generative AI, Data Analysis, TensorFlow, NLP, Time-Series Analysis.
Data Engineering & Cloud: AWS (EC2, Lambda, S3, Glue, Step Functions, SageMaker), Docker, Kubernetes, Airflow, Snowflake, Databricks, Kafka, dbt, PostgreSQL, MySQL, Redshift.
Data Visualization: Tableau, Power BI, QuickSight, Plotly, Dash, Streamlit, Matplotlib, Seaborn, Excel (VBA), QGIS, Google Maps API.
Development Tools: Git, GitHub Actions, CI/CD, REST APIs, Microservices Architecture, Caching, OAuth 2.0, JWT Authentication, Linux, Visual Studio.

TECHNICAL PROJECTS

AI-Driven Retrogressive Thaw Slump Detection & Climate Forecasting

- Developed and deployed deep learning models (Mask R-CNN using Detectron2 & PyTorch) to automatically detect and segment ~2,700 active permafrost thaw-slump regions from ArcticDEM satellite elevation time-series, enabling large-scale 3D geomorphic analysis across the Northern Hemisphere.
- Processed geospatial big-data pipeline using Python (NumPy, pandas, SciPy) and AWS S3 + HPC clusters, performing DEM co-registration, temporal differencing, and error correction to achieve <0.5 m elevation accuracy for volumetric loss quantification.
- Engineered an automated ML workflow integrating DEM curvature mapping, time-of-change modeling, and deep ensemble training on Nvidia A100 GPUs, improving model recall by 20 % and reducing false detections by 3× in multi-region permafrost monitoring.
- Correlated AI-derived terrain dynamics with ERA5 climate and NCSCD carbon datasets using statistical and regression modeling, quantifying temperature- and precipitation-driven thaw patterns and Visualized model outputs and geospatial predictions through QGIS, Plotly, and Matplotlib, creating interactive volumetric-loss maps (~317 million m^3) and climate-impact dashboards for AI-assisted environmental forecasting.

MediScan — Intelligent Web-Based Medicinal Plant Recognition Platform

- Architected and developed a full-stack web platform using React, Flask, and Google Cloud Vision API to let users upload plant images and automatically retrieve validated medicinal information through Google Search integrations.
- Designed modular backend microservices with FastAPI, PostgreSQL, and AWS EC2, enabling asynchronous task execution, secure data persistence, and scalable API orchestration for concurrent image requests.
- Integrated an agentic AI module using LangChain and OpenAI APIs to autonomously summarize, verify, and contextualize search results, improving data reliability and user trust by 35%.
- Implemented authentication and session management with Google OAuth 2.0, JWT, and S3-backed history tracking, allowing personalized access while preserving privacy and compliance.

Sensitive Data Redaction, Recovery and Crime Prediction Platform

- Engineered an end-to-end data processing and NLP pipeline to extract, clean, and structure data from CSV, PDF, and JSON files using PyPDF2, Pandas, and NumPy, improving preprocessing efficiency and model readiness by 45%.
- Developed advanced PII redaction and entity recognition models with spaCy Transformers, TF-IDF, and regex, ensuring high data security, compliance, and contextual accuracy for unstructured text analytics.
- Designed an interactive Streamlit-based analytics dashboard integrating Plotly Express and Google Maps API to visualize crime hotspots and time-based trends, empowering data-driven crime-risk forecasting.
- Implemented supervised Machine Learning models (Random Forest, Logistic Regression, Gradient Boosting, DBSCAN) to predict crime-prone areas and peak time intervals, improving predictive accuracy and interpretability for stakeholders.