Yug Oswal

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EDUCATION

VIT Vellore — Vellore, Tamil Nadu, India
Bachelor of Technology in Computer Science and Engineering, CGPA: 9.43 — *Sep. 2022 - Present*

NHVPS, RR Nagar — Bangalore, Karnataka, India
Playgroup - 12th Grade, 12th Boards: 96.4% — *Aug. 2007 - Jun. 2022*

EXPERIENCE

AI/ML Engineer — Jul. 2024 – Oct. 2024
Bharat Dynamics Limited - Ministry of Defence, India (Details omitted due to confidentiality) — *Hyderabad, India*
- Collected a drone detection dataset, extracted frames, and linked annotations using MATLAB's Computer Vision Toolbox. Developed MATLAB scripts to preprocess and prepare the data for training.
- Conducted literature surveys, experimentation, and hypertuning on various object detection models/techniques and training strategies to build a robust UAV Detection and Tracking service for field scenarios.
- Deployed models on edge (with remote access) and in custom web applications within isolated systems, facilitating seamless migration of environments across isolated systems without disruption.

Machine Learning Engineer — Feb. 2024 – Jul. 2024
WebTiga, Synergetics.AI - A Startup by the Head Instructor, MIT Sloan AI (USA) — *Bangalore, India*
- Developed end-to-end machine learning solutions for diverse clients such as insurance classification and speech recognition models for car damage assessment based on engine audio analysis.
- Spearheaded the entire ML project lifecycle from data collection, model training, creating backend wrappers for pre-deployment testing, model deployment, and final integration of models with client systems.
- Designed and developed agentic workflows, guardrails, context-aware chat history, and RAG pipelines for fine-tuned LLMs. Dockerized and deployed developed pipelines, with real-time integration into client-used services.

Project Lead — Jun. 2023 – Aug. 2023
University of Auckland & Signal Corporation Limited — *Auckland & Wellington, New Zealand*
- Led a multicultural, international team, coordinating efforts between staff, clients, and stakeholders to ensure seamless project execution.
- Devised an enhanced machine learning solution for Signal Corporation's real-time threat prediction system, improving detection of threats such as mass shootings and bombings. Recommended a comprehensive pipeline involving text pre-processing, incremental clustering, NER, and geocoding to strengthen prediction accuracy.
- Resolved 5 real-world issues in Named Entity Recognition, addressing challenges like location ambiguity and slang usage. Enhanced geocoding methods for more precise linkage of textual locations to coordinates.

PROJECTS

Artificial Intelligence Research | *Tensorflow, Keras, Numpy, Pandas, Seaborn, Jupyter Lab* — May 2023 – Present
- Led research initiatives in collaboration with Google DeepMind, E&Y professionals and the Dean of SELECT, VIT, implementing and testing novel loss & activation functions, and neural layers (DNN/RNNs) to optimize neural networks' size, parameters, learning capabilities and capacity. Published two papers and contributed to one.
- Trained large and complex models utilizing state-of-the-art ML techniques locally on highly powerful GPU machines on expansive datasets like ImageNet (1.5 million images).

Rekindle | *Tensorflow (keras), pandas, Python, FastAPI, PostgreSQL, Ngroks, Git* — May 2023 – May 2023
- Developed a service for Alzheimer's and Dementia patients, winning the Intel (BOLT) Hackathon. The project was also featured in Intel's Developer Spotlight.
- Trained custom encoder-decoder NLP models with novel loss functions and distributed strategies across multiple GPUs via SSH port forwarding, surpassing performance on the Google GoEmotions benchmark. Deployed the models by creating API endpoints for inference and transferring trained weights from remote GPUs via SFTP.

TECHNICAL SKILLS

Technical: C, C++, Python, Java, JavaScript, Node.js (Express), Flutter (Dart), Firebase, MongoDB, Docker, Tensorflow, Scikit-learn, Numpy, Pandas, Seaborn, Matplotlib, Statsmodels, R, HTML, CSS
Certifications: Machine Learning Specialization, Deep Learning Specialization, DeepLearning.AI Tensorflow Developer Professional Certificate, EDA and Data Visualization (Scaler), Advanced Techniques in Tensorflow