

Yug D Oswal

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EDUCATION

VIT Vellore

Bachelor of Technology in Computer Science and Engineering, CGPA: 9.42

Vellore, Tamil Nadu, India

Sep. 2022 - Present

RESEARCH

Cone-Class of Activations, Outperforming ReLU-like Activations

Mathew Mithra Noel, Yug D Oswal

Submitting to ICML, 2025

- Model learns two coordinated hyperplanes, forming a hyperstrip and dividing euclidean space more finely.
- Made $\geq 3\%$ Top-1 error improvement on ImageNet with 40 million parameters lesser in VGG19.

Loss Switching, Novel Classification and Regression Losses

Mathew Mithra Noel, Arindam Banerjee, Yug D Oswal*, Geraldine Bessie, Venkataraman MN*

arXiv, 2024

- Model trains with diverse losses using the novel scheduling algorithm, loss switching, optimizing learning.
- Novel regression losses SMAE and SQRT are functionally infinitely close to MAE, differentiable, and more robust.
- Proposed losses and training algorithms outperform crossentropy, MSE, Huber, and others on 7 benchmarks.

EXPERIENCE

AI/ML Engineer

Jul. 2024 – Oct. 2024

Bharat Dynamics Limited - Ministry of Defence, India

Hyderabad, India

- Procured and curated a dataset for UAV detection using MATLAB scripts and the Computer Vision Toolbox.
- Researched, experimented, and hypertuned SOTA object detection models, techniques, and training strategies to build a robust UAV Detection and Tracking service for field scenarios.
- Engineered unique edge and web migratable model deployments on isolated systems following defence policies.

Machine Learning Engineer

Feb. 2024 – Jul. 2024

WebTiga, Synergetics.AI - A Startup by a MIT AI Course Instructor

Bangalore, India

- Developed classical ML POCs for clients in the insurance domain. Built an audio-based car damage classifier.
- Led the ML lifecycle: data curation, model training, API creation, backend testing, deployment, and integration.
- 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 an international team, coordinating members, clients, and stakeholders to ensure seamless project execution.
- Resolved 5 real-world issues to enhance Signal Corporation's real-time threat prediction system.
- Developed a pipeline involving incremental clustering, Named Entity Recognition (NLP), and geocoding.

PROJECTS

AI/ML Research | *Tensorflow, Keras, Numpy, Pandas, Seaborn, Jupyter Lab*

Mar. 2023 – Present

- Collaborated with Google DeepMind, E&Y professionals and the Dean of SELECT, VIT for research in knowledge representation, theoretical and empirical deep learning.
- Independently handled all code implementation, experiment design, hypothesis testing, and benchmarking.
- Collaboratively handled formulation and iterative refining of proposed mathematical and statistical concepts.
- Trained deep and complex neural networks in multi-GPU environments on large datasets like ImageNet.

Rekindle | *Tensorflow (keras), pandas, Python, FastAPI, PostgreSQL, Ngroks, Git*

May 2023 – May 2023

- A service to aid Alzheimer's and Dementia disease patients. Featured in Intel's Developer Spotlight.
- Trained custom encoder-decoder NLP models with novel loss functions and distributed strategies, surpassing performance on the Google GoEmotions benchmark.

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