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🖓 GitHub in LinkedIn 🐠 Medium

# Education

Rajiv Gandhi Proudyogik Vishwavidyalaya

B.Tech (CSE)

# Skills

Languages - C/C++ | C# | Python | JavaScript | Vue.js | SQL

Frameworks - PyTorch | Tensorflow | Langchain | LlamaIndex | Spacy | Librosa | FastAPI | vLLM | Onnx | Selenium DevOps/Tools - Git/GitHub | Docker | Kubernetes | GCP | Unity Engine

# Experience

# Artificial Intelligence Intern

Wysa – Touchkin Pvt. Ltd.

- Optimizing language models for faster inference and performance.
- Migrating Wysa's internal NLP-AI tools from a Flask to a FastAPI-based implementation.
- Working with sensitive mental health datasets, refining for better performance.
- Training and fine-tuning language models to boost the NLP capabilities of the Wysa mental health app directly enhancing the experience of over a million active users.

### Deep Learning Intern (R&D)

DeepLogic Al

- Worked under the R&D team and engineered various high-throughput retrieval pipelines to scale and replace, Vectara endpoints within DeepLogicAI's enterprise search solutions.
- Conducted rigorous trials across various versions of RAG pipelines for each component such as re-rankers, chunking, and indexing, and finetuning multilingual embedding models on custom datasets.
- Our retrieval system outperformed high-precision retrieval models such as ColBERT (v2).

## AI Intern

#### FireLLama Pvt. Ltd.

- Explored various Vision-Language Models (VLMs) to replace the PaddleOCR solution, enhancing the retention of document structures. Managed the entire process from *Proof of Concept* to deployment.
- Developed speech APIs for chat-bots leveraging various open-source speech models.
- Fine-tuned VLMs and used pre-trained CNNs to create rich embeddings for visual-image search.
- Developed multiple APIs encapsulating different anomaly detection models and writing lengths of unit tests.
- Created custom metrics to evaluate models for classification and Name Entity Recognition (NER) tasks.

# Projects

Graph-Enhanced Visual Language Processing – Intersecting Language and Graphs: Python, PyTorch, VLMs, Graphs

Graph Vision is a Python library that aims to create topological maps for an environment connecting neighboring image segments, capturing each segment's spatial and semantic feature embeddings.

Enables localization of objects relative to one another in the topology with language description of the objects using Dijkstra's algorithm.

- Brain MRI Segmentation for Tumor Detection: Deep Learning, PyTorch, Docker, Streamlit
- Model trained on a diverse dataset encompassing various tumor and non-tumor scans. Capturing the inherent heterogeneity of brain tumors encountered in clinical practice, re-producing the U-Net paper 2015.
- The project has a docker image available on Docker Hub. A user-friendly front-end interface on Hugging face space for real-world clinical inference achieving a high validation Dice score of ~0.9.

#### Pool of Models: PyTorch, ViTs, CNNs

- A GitHub repository containing a variety of Deep Learning architectures implemented from scratch with PyTorch, features both supervised and unsupervised learning models.
- The architecture primarily includes various models such as ViTs (Swin, Mae, Dino, CvT), GPT, CLIP, etc. A detailed walkthrough of some of these papers is on my medium page.

#### Sentence-Level Lipreading: PyTorch, Deep Learning, LSTM

- A Recurrent Network model to predict the spoken sentence by extracting features from the lip movements in the frames.
- Improves upon the paper based on End-to-End Sentence-level Lipreading by replacing the GRU-based Implementation with a bi-directional LSTM using a CTC Loss to handle the variable length of input alignments (spoken sentence) with Kaiming Normal (He) initialization.

#### Other Achievements and Contributions

- 5\* Star gold SQL on Hackerank
- Partner writer under various renowned publications explaining deep learning architectures and giving detailed paper walkthroughs.
- Contributed to the winning AI Team in the Wysa internal Hackathon.
- Bronze Medalist on Kaggle Dataset for dynamic IMDB dataset generation.

# Courses

- Deep Learning Specialization by Andrew Ng DeepLearning.AI
- Structuring Database and Management systems with MySQL from Meta
- Modern Computer Vision PyTorch, Tensorflow2, OpenCV
- Algorithmic Toolbox by University of California San Diego

#### Coursera Coursera Udemy Coursera

Bangalore, India

Bhopal, India

2021-2025

#### Aug 2024 – Present

Remote

Feb 2024 – May 2024

# Delhi, India

# March 2024 - May 2024