

HRITHICK SEN

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Skills

Languages: C, Python, MySQL

Technologies & Tools: Langchain, VLMs and LLMs (Llama, LLava, Mixtral 8x7b (MoE), Vicuna), PyTorch & TensorFlow, PySpark, AWS, NLP (TFIDF, BERT, T5), Generative AI, Machine Learning, Deep Learning, Statistics, Data Analysis, VectorDB

Work Experience

OGMA IT LLC | Data Scientist

June 22 - Present

- Built 'The Credit Genius' chatbot using **LLama 3** with **RAG** pipeline to answer queries from written material and Video Lectures. Implemented techniques like **Sentence Window Retrieval**, **Hypothetical Questions (HyDe)**, and **Contextualizer** to achieve superior (>94%) answer relevancy, Context Recall, and Faithfulness score.
- Developed a Multimodal **DocumentAI** system to extract Logistic Tickets data, reducing verification time and costs by **91%**. Fine Tuned **pix2struct-textcaps** initially, then transitioned to **Claude 3-opus** for enhanced capabilities.

Openstream.ai | Data Scientist

Jan 22 - June 22

- Collaborated with the team to build and deploy question-answering systems leveraging knowledge graphs (using Cypher and Neo4j) and language models (such as BERT, T5, and DistilBERT) by fine-tuning them for **intent recognition**, **entity extraction**, and **English to Cypher query translation**.
- Built a pipeline to automatically extract structured tables from documents into a knowledge graph using Table Transformer (**DETR** fine-tuned to detect tables) and **YOLO**.

Kesowa | Machine Learning Engineer

Apr 2021 - Jan 22

- Optimized and improved the performance metric of the tree detection model on large aerial images (>25GB), reducing training time and enhanced post-processing for shape file generation, enabling QGIS visualization.
- Programmed an automated attendance system leveraging **Siamese network for face recognition/verification**, specifically designed for company employees and deployed on a Jetson Nano.

Projects

Implemented Vision Transformer From Scratch (25 ★) [🔗](#)

Jan 23

Implemented paper titled "An Image is Worth 16x16 Words: Transformers for Image Recognition at Scale" using TensorFlow.

- This project provides effortless support for fine-tuning Pretrained ViT models with Minimal Code and Maximum Flexibility on Custom Datasets. Supported models: **ViT-BASE16**, **ViT-BASE32**, **ViT-Large16**, **ViT-Large32**.

Transformer from Scratch: Spanish to English (5 ★) [🔗](#)

Dec 22

Implemented the Transformer paper titled "Attention Is All You Need" using TensorFlow 2.0.

- Gained a deep and practical understanding of the Transformer model, GPT, and BERT.
- The model was trained using Spanish to English translation data. Attention maps were visualized for better interpretability.
- Read my in-depth blog on the Transformer architecture [here](#).

Google Satellite Image to Streetmap Image translation using Pix2Pix GAN(28 ★) [🔗](#)

Feb 21

Reimplemented and Reproduced the paper 'Image-to-Image Translation with Conditional Adversarial Networks'.

- Leveraged a conditional generative adversarial network (cGAN) named Pix2Pix for the Image-to-image translation task.
- Implements the Pix2Pix GAN model for performing Google Satellite Image to Streetmap Image translation. By training on paired images, it generates realistic street maps that align with the corresponding satellite images.
- Read my in-depth blog on GAN [here](#) [🔗](#)

Education

Global Institute of Management and Technology, (MAKAUT, Formerly WBUT), India

2018 - 2022

- Electronics and communication Engineering | CGPA: **8.8**