Maninder Singh

An accomplished Data Scientist and NLP Specialist currently working in the role of Data Scientist passionate about creating impactful solutions and solving complex business challenges

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My Medium Publications
Github Profile

EXPERIENCE

Indium (Uber), Bengaluru—Data Scientist

Feb 2025 - Present

- Developing a **Transformer-based Auto-Transcription pipeline** to process global earner documents (DL, VR, Insurance, etc.) and predict key values with higher accuracy than human annotators.
- Fine-tuning models and deploying the solution to **production for real-time processing**, driving measurable business impact and profitability.

LTIMindtree, Bengaluru— *Sr. Software Engineer*

July 2022 - Jan 2025

- Developed an IT video analysis system using Multimodal LLMs to detect software/tools and summarize coding tasks with 83% accuracy.
- Fine-tuned LLM and built a speech-driven natural language query system for database retrieval with 85% precision.
- Led internal hackathon project to develop a GenAI chatbot using Retrieval-Augmented Generation (RAG).
- Built transfer learning-based classification systems achieving 95% accuracy, 93% precision, and 88% recall, even with limited data (~hundreds of samples).
- Enhanced deep learning model in an Intelligent Ticket Dispatcher system, improving accuracy from 20% to 78%.

EDUCATION

Indian Institute of Technology (IIT), Palakkad
M.Tech - Data Science

September 2020 - June 2022

Served as **Post Graduate (PG) Affairs Secretary** and played a crucial role in many PG-related policy designing

SKILLS

- Technical Blogger
- HuggingFace and Ollama
- Agentic AI with LLMs
- Natural Language Processing (NLP)
- Transformers
- Large Language Models(LLMs)
- Retrieval Augmented Generation (RAG)
- Azure ML Studio
- Leadership and Teamwork
- Effective Storytelling

ACHIEVEMENTS

Open-sourced model on hugging face which got **99000+** downloads and is being used in **LLM Guard by Protect AI**

Spot Quarterly Award, Indium
For effective and timely delivery

Spotlight Award, LTIMindtree
for exceptional Dedication and contribution to Projects

Ranked in the Top 10 in LTIMindtree Global Hackathon for creating LLM based Chat Platform for Uploaded Document

Vision Transformer (ViT) from Scratch — *Github Repository*

 I wanted to figure out how Vision Transformers (ViTs) really work, so I decided to build one from the ground up.

Transformer (Backbone of Modern LLM) from Scratch — *Github Repository*

 Building Language Translation by building a Transformer (Encoder-Decoder) from Scratch. The idea is to Learn the architecture of a Transformer.

NLP Data Augmentation Methods — *Blog on it*

I have built various NLP Data Augmentation methods like Synonym Replacement, Context word Replacement, etc. which also got adopted by many in my current organization for their work.

Fine-Tuned and Open-sourced Programming Language Detection Model - Model Link, Blog link

Fine-Tuned huggingface/CodeBERTa-small-v1 on cakiki/rosetta-code Dataset on 26 Programming languages and open-sourced it

PUBLICATIONS (clickable links)

- The Detailed Explanation of Self-Attention in Simple Words
- How to Optimize LLM Inference ?
- Fine-Tune LLMs with LoRA
- Mathematics Behind Convolution and Deconvolution in Computer Vision
- Simplifying PCA: The Math, The Intuition, and Real-World Data Insights
- Understanding Categorical Correlations with Chi-Square Test and Cramer's V
- Reducing Video Length with Frame DeDuplication

Certifications

AI for Medicine
DeepLearning.AI (Coursera) Nov 2024

NLP Specialization
DeepLearning.AI (Coursera) Dec 2023

Generative AI with LLMs
DeepLearning.AI (Coursera) Aug 2023

Prompt Engineering for ChatGPT
Vanderbilt University(Coursera) July 2023