S M Kushal
Aerospace Engineering 2020 - 2024
Indian Institute of Technology Bombay
AIR 807 in JEE Advanced | **AIR 264** in JEE Mains

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EXPERIENCE

Applied AI & Backend | DataBrewery.ai   *(Oct - Present)*
- Worked with **MaterialDepot** a **ycombinator** company, To build a platform where anyone can upload their interior and replace tiles, cupboards etc.. Involved fine-tuning image masking models.
- Building a **Data Labeling Platform** which offers services like annotation, model benchmarking etc. Worked with a client **murph.ai** on **text to speech labeling** which involved **building 100s of annotation workflows.**

Applied AI & Full Stack | elzo.ai : A User Research Chat Platform   *(Jan - Oct 2024)*
- Built a multi Agent pipeline for our Chat system, that starts from simple objective and persona. This involved **Prompt Iteration**, **jail breaking** checks, Enriching the inputs given for better responses.
- Built an **Insight generation** system. An automatic way to process the conversations had on the platform and show the key observations, sentiments, and actionable insights.
- **Built RAG** capability into the **Django** codebase for our User Research Chatbot service at elzo.ai. People can upload documents, links etc.. and I made sure relevant context from all this data is fed into the chat.
- Developed **datasets** to test our prompt changes **analytically**.Synthetically generated & edited by our team.
- **Implemented** the frontend logic for our Interactive Conversation Survey system. Coded the landing page.
- Built & **deployed Voice** for our Chat System. Integrated **Phone & Web Call** capabilities into the platform.
- Developed an internal **AI Slack bot** that has context of all the channels.**RAG pipeline** with **real time data**.

AI Research | Graph Neural Networks   *(May - Jun 2023)*
- Noticed some modern innovations like **Residual Connection, Message Passing** were not tried on GNNs.
- Implemented them and saw a **1.5% increase in test time accuracy** over **PMLP** (state of the art). *arXiv*

Data Analysis and Optimization | WorkdePot   *(Nov - Dec 2023)*
- Developed a **forecasting model** for tshirt sales, optimizing inventory management at Workdepot.
- Implemented a **real-time system** for recommending **quantity, shipping methods** based on forecasts.

PROJECTS

OPEN SOURCE at Hugging Face   *(July - Oct 2023)*
- Wrote Chapters **Model Optimization**, **Model Deployment** for the **Hugging Face Computer Vision Course**

Fine Tuning a LLM on a Curated Dataset   *(March 2023)*
- **Fine-Tuned GPT2** pretrained on **28,000** paragraphs from **Paul Graham's** Essays using **Hugging Face** API.
- **Scraped** the data, **Tokenized** and **Trained** the model. Built a **Gradio App** to interact with the model.

Projects I built whilst learning Neural Networks , Reinforcement Learning   *(Dec 2022 - May 2023)*
- Built an Agent to play Pool using **UCT Tree Search**. Learnt the workings behind the famous AlphaGo.
- Coded **Howard policy iteration** to solve a 3-player 4x4 football game with encoder, planner, decoder.
- Implemented **Back-Propagation** for Batch-Norm, Softmax and Wrote **Multi-Head Attention** from scratch using Numpy for stronger intuition. Trained a LLM with the **GPT2 architecture** on Shakespeare writings.

TECHNICAL SKILLS	**Full-Stack :** Django React Redux
	Cloud : Docker Kubernetes Google-Cloud
	AI: PyTorch Pydantic Hugging Face
TOOLS	**Apollo Figma Whimsical Cursor AI**
LANGUAGES	**Python Javascript GoLang** English Hindi Kannada Telugu
REIEVANT COURSES AT IITB	**CS728 Organization of Web Information CS726 Advanced ML**
	**CS747 Intelligent & Learning Agents	Reinforcement Learning**
	SC 646 Distributed Optimization & ML
HOBBIES	**Books Gym Listening to Podcasts Writing**