



S M Kushal
Aerospace Engineering 2020 - 2024
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EXPERIENCE

Applied AI & Backend | DataBrewery.ai

(Nov - 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
RELEVANT 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