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Aerospace Engineering 2020 - 2024
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EXPERIENCE

Applied AI & Full Stack | ELZO.AI *(Jan - Oct 2024)*

- Designed and Implemented a pipeline for **production-ready RAG** (Retrieval-Augmented Generation) into the Django code-base, enhancing contextual relevance in AI-powered user research studies.
- **Architected** and deployed an AI-driven **open-ended survey system**, designing the agent structure and crafting effective prompts to generate comprehensive question sets from simple objectives.
- Developed an automated **insight generation system**, **extracting key observations with their frequencies**, actionable insights, **user sentiments** etc.. **from the data** collected through the **open-ended survey system**.
- Experimented with **fine-tuning** open-source models with 100's of User Research Conversational Data.
- **Coded** React based **frontend components** for the conversation system and built the **landing page**.
- Learned to write YAML files while **setting up a staging server**, understanding **DevOps processes**.
- Gained deep understanding of user research methodologies and product management needs, applying this knowledge to refine AI-generated questions and improve study effectiveness.

AI RESEARCH | Graph Neural Networks *(May - Jun 2023)*

- Implemented techniques that **Generalize GNNs better than state-of-the-art. Authored a paper** *arXiv*
- Introduced **Residual Connections** into **GNNs** to foster scalability, **higher test accuracy**. Incorporated **learnable weights** within **message passing**, enhancing the **information propagation within GNN.**

Data Analysis, Prediction and Optimization | WorkdePot *(Nov - Dec 2023)*

- Predicted sales for Workedepot store using **forecasting** algorithms **ARIMA, Prophet, Exp Smoothing**, etc.
- Built a **real-time system** to recommend **quantity, date,** shipping methods based on forecasted demands.

PROJECTS

OPEN SOURCE at Hugging Face, UnifyAI *(July - Oct 2023)*

- Wrote Chapters **Model Optimization**, **Model Deployment** for the **Hugging Face Computer Vision Course**
- **Resolved an Issue** for the **UnifyAI** Platform regarding **compatibility** between **JAX and Pytorch**.

Fine Tuning a LLM on a Curated Dataset | GPT2 *(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.

Reinforcement Learning *(Autumn 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**GitHub

Computer Vision, NLP | CS231n Stanford *(Nov-Jan 2022)*

- Implemented Back-Propagation for **Batch-Norm**, **Softmax** to gain stronger intuition. Github.
- **Trained** a transformer based **Shakespeare LLM model**, a **Image Captioning** & **Segmentation** models.
- Wrote **Multi-Head Attention** from **scratch using Numpy,** gained **intuition for attention mechanism**

TECHNICAL SKILLS	**Full-Stack :** Django Gin Ruby on Rails React Redux **Cloud :** Docker Kubernetes Google-Cloud **AI:** PyTorch JAX Hugging Face		
TOOLS	**Postman Git 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**		