

Faizan Khan

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EDUCATION

Carnegie Mellon University (CMU), Pittsburgh, PA

August 2021 - December 2022

Master of Information Systems Management

Specialized Courses: Introduction to Deep Learning, Question Answering, Advanced Natural Language Processing, Data Mining

Vellore Institute of Technology (VIT), Vellore, India

August 2014 - May 2018

Bachelor of Technology, Computer Science

PROFESSIONAL EXPERIENCE

AI & ML Applied Scientist

Jan 2023 - Present

Finetune Learning (A Prometric Company)

Remote, USA

- Implemented machine-learned models for understanding queries and ranking search results, resulting in saving \$150,000 annually and increasing efficiency in generating detailed questions for competitive exams.
- Innovated in prompt engineering by leveraging GPT-3.5 and GPT-4 models.
- Led the innovation and implementation of a Chain-of-Thought (CoT) strategy, enhancing the system's capability to tag and score questions efficiently, working closely with Subject Matter Experts and technical teams.
- Devised a search relevance algorithm employing OpenAI embeddings for precise tagging, saving 10 hrs of manual efforts weekly.

NLP Research Intern

May 2022 - August 2022

Philips

Boston, MA

- Improved search relevance by advancing relation extraction processes, effectively boosting the F1 score of identifying evidence sentences to 71.4% using Dense Passage Retriever (DPR).
- Collaborated with a team of doctors, software engineers and technicians for the deployment of the above improved model for an interactive conversational interface for medical device manuals.

Data Scientist – NLP

Mar 2020 - August 2021

Deep Learning Analytics

Remote (Part-Time)

- Engineered a PyTorch-based search engine utilizing T5 vectors & AWS Elasticsearch, refining search ranking algorithms through beta testing and user feedback. Achieved an EM of 78% & F1 of 85%.
- Successfully deployed optimized search engines for a large user base at Accenture (700k users).
- Executed projects at scale in **Text Summarization, Information Retrieval, Question Generation, NLU, and Prompt Engineering**.

Associate Technical Lead – NLP

July 2020 - July 2021

Zycus

Mumbai, India

- Developed and maintained large-scale indexing and data pipelines, creating models for supplier filtering and optimizing matching processes using Latent Semantic Hashing (LSH), Elasticsearch and FAISS.
- Orchestrated the development of a conversational AI system to facilitate user queries.

PROJECTS AND RESEARCH EXPERIENCE

Adapting Emotions across Accented Speech using Auxiliary Labels

CMU, Sep 2022 - December 2022

- Enhanced **Domain Adaptation** by implementing a **custom Domain Adversarial Neural Network (DANN)** from scratch to optimize a Multimodal (Speech + Text) emotion model for accents improving overall F1 score to 72%.

PyTorch-based Speech Frames Classification

CMU, Sep 2022 - November 2022

- Leveraged **PyTorch** to design and train an MLP model, classifying speech frames as phonemes using MFCCs. Achieved an impressive 87.3% accuracy and ranked in the top 2% on Kaggle (private CMU competition).

Improving Retriever Architecture for Financial Question Answering

CMU, Jan 2022 - Mar 2022

- Under Prof. Eric Nyberg & Prof. Teruko Mitamura, revamped the Retriever architecture **using TensorFlow and JAX**, enhancing semantic & numeracy representations for Financial QA. Surpassed the State-of-the-Art, with 97% recall.

SKILLS

Natural Language Processing: Deep Learning, Machine Learning, Query Understanding, Document Ranking, Search Relevance, Data Ingestion Pipelines, Information Retrieval, Text Summarization, Text Mining

Multi-Modal Processing: Image Processing, Audio Processing, Text Mining, Video Processing

Languages/Tools: PyTorch, Tensorflow, Python, JAX, Java, HuggingFace, Spacy, NLTK, Numpy, Scikit-learn, Pandas, AWS, Amazon Lambda, Keras, Git, Github, C, C++

Web and Database: Elasticsearch, FAISS, SQL, NoSQL – MongoDB

Interpersonal: Excellent communication and collaboration skills, able to work independently and in a team environment.