

Risan Raja

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OBJECTIVE: Seeking a Research-Focused Machine Learning Engineer position to utilize 4+ years of experience and a strong aptitude for problem-solving in developing and implementing innovative solutions within a dynamic and challenging environment.

WORK EXPERIENCE

CENTER FOR COMPUTATIONAL BRAIN RESEARCH, IIT MADRAS

ML and Computer Vision Research Intern 2024-2025

- Developed Automated Image Registration and Stacking for Histological Images. Repurposed various **SOTA MRI** based registration pipelines for histological images by optimizing it to handle large histological images (200GB+/image).
- Developed a novel optimized pipeline for finding errors within the annotated anatomical structures by adopting the best practices from geospatial data processing.
- Implemented an end to end ETL pipeline using **Dask and Pytorch** which leveraged the existing anatomical data stored in geospatial format to stream asynchronously **100K patches/s** of large histological for training the deep learning models.
- Contributed to the development of **RAG based QA** system for Neuroscience based projects.
- Developed automated CI/CD pipeline to integrate with the frontend using Jenkins and Docker

IBG CONSULTING.....

Business Analyst 2021-2024

- Worked closely with the management to develop a machine learning model using **Pytorch and NIXTLA** based on the trading patterns of the commodities options and futures markets to model the viability of sales/export demand in various international markets for raw materials procured by the company.

CODERSTRUST

Digital Marketing Strategist 2017

NIELSEN SPORTS.....

Digital Analyst 2016

AWARDS

First Place, PixelMind AI Hackathon 2023

- Created an AI Agent using **RL** by leveraging the MAXIM and SPLINET for automatically enhancing high-resolution photography images.

Third Place, DSA Challenge, IITM 2023

9th Place, WorldQuant Alpha Challenge 2023

- Developed Simulated Annealing based Genetic Algorithm which used the PnL generated by the Alpha as a heuristic. The automated alpha generation used AST based code generation to meet the competition requirements. The guided search algorithm further refines the alpha using **SGD** based optimization.

EDUCATION

B.S. Data Science and Programming, IIT Madras 2024

BSc Information Technology, SMU 2018

TECHNICAL PROJECTS

POINTWISE TEMPORAL FUSION TRANSFORMER.....

- Redesigned Temporal Fusion Transformer from ground up to handle multi horizon prediction in non-stationary financial data. The novelty is in the ability to perform like a deep time index model for time series forecasting tasks. Custom training loop was developed to handle the large training and utilized 8 A100 GPUs to train the model in 3 days. Finally outperforming the best solution published in the original kaggle challenge. Rewrote the code from **Tensorflow** to **Pytorch Lightning** to leverage FSDP for distributed training.

ONDC INDEXING SYSTEM.....

- Retrained existing **JINA** embedding model to handle indian categorical data for the ONDC project. The model was optimized to handle the large scale data and was deployed on GKE cluster, the model was also further optimized using attention layer fusion to optimize for large scale data.