# Atharva Joshi

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## Education

**Northeastern University (NEU), Boston, MA** Dec 2023

MS in Electrical and Computer Engineering, Specialization in Machine Intelligence.

**Courses:** Deep Learning, Advanced Machine Learning, Reinforcement Learning, Parallel Processing.

**Birla Institute of Technology & Science, Goa, India** May 2019

Bachelor of Engineering (Hons.) in Electronics & Instrumentation

**Courses:** Deep Learning, Machine Learning, Quantum Computing, Programming, Microprocessor programming.

## Technical Skills

- **Programming Languages**: C++, Python, Java, MATLAB, SQL, PySpark
- **Libraries**: Pytorch, Pandas, Tensorflow, HuggingFace, Numpy, Scikit-learn, , NLTLK, SpaCy, LangChain
- **Technologies**: InfluxDB, Hadoop, Kubernetes, Streamlit, ChromaDB, Grafana, Docker, AWS, Git, Tensorboard

## Experience

### Abiomed - Applied Research, Boston, USA

**Data Scientist** July 2022 – Dec 2022

- Led the Left Ventricle Volume prediction, greenfield animal research project, achieving mean RMSE of 14% (0-250 mL) across hemodynamic states, constructing a deep LSTM network using implanted heart pump data as input.
- Delivered a large increase (10x) in training data using Fourier based resampling with physiological constraints.
- Deployed an LLM (BioBERT) NER pipeline to extract drug names, enabling use of ICU notes as data. Utilized HuggingFace API's & analyzed performances of multiple LLM's.

### Dell Technologies - UDS, Bangalore, India

**Software Development Engineer** July 2019 – July 2021

- Decreased database transaction latency by 15% and fixed intermittent scale down of transaction segments.
- Initiated availability of the stream tags feature in the product by implementing REST API's using Swagger.
- Improved verification of product gurantees by implementing & evaluating the horizontal scalability tests suite.

### Morningstar - Quant Research, Mumbai, India

**Machine Learning Engineer** Jan 2019 – June 2019

- Developed a BERT-based sentiment analysis model with few shot learning to predict international equity prices using News API data extracted from built ETL pipelines. Presented results led to buy-in of key stakeholders.
- Reduced MSE of the price forecasting model by more than 50% ,implementing an autoregressive LSTM network.
- Enhanced investor decision making for thematic investments by developing an NLP driven heuristic utilizing textual data from financial news providers to assess company-market theme alignment.

### Tamil Nadu eGovernance Agency, India

**Machine Learning Engineer** May 2017 - July 2017

- Introduced ML based technique to match missing person reports with unidentified dead bodies, building an XGBoost classifier with more than 90% F1 score. Utilized GIS data for measuring geographical proximity.

## Select Projects

- **Traffic Forecasting:** Improved the MAE on hour ahead forecasts by 6.5% by modifying the STGCN architecture. Compared performance against DCRNN, GMAN &A3T-GCN models implemented in a resource constrained setting
- **YouTube Playlist Recommendation:** Built a 7 class YouTube Playlist recommender system with an accuracy of 70% using data from transcripts of videos. PySpark is used to process transcripts, the T5 model summarizes them and OPT-30B generates embeddings that are used to compute similarity, which is the basis of recommendations.
- **nanoGPT:** Built an LLM from scratch to generate Shakespearean text. Carried out ablation studies of various components using relative training performance. Compared against Falcon, ChatGPT & fine-tuned GPT2.
- **LLM based PDF Chatbot:** Developed an application to answer user queries using Flan-T5 LLM & Sentence-BERT. Hosted using Streamlit with UI to upload the document & select language and embedding model
- **Melanoma Segmentation:** Implemented the MEDNET paper in PyTorch to perform weakly supervised semantic segmentation of RCM mosaics and detect 4 types of melanoma lesions, enabling downstream development.