Mohd Umar

New Delhi, India

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Education

Jamia Millia Islamia **New Delhi, India**

Bachelor of Technology, ***Electronics and Communication Engineering(ECE)****: CGPA 8.2/10.0* *2021 – 2025*

Lucknow Public College **Lucknow, Uttar Pradesh**

Senior Secondary School: ***95.60%***

High School: ***95.67%***

Technical Skills

Languages: Python, Java, C/C++, HTML/CSS, JavaScript, SQL
Developer Tools: VS Code, Eclipse, Google Cloud Platform, Android Studio, AWS
ML Libraries: TensorFlow, PyTorch Keras, Scikit-learn, NumPy, Pandas, Scipy, Matplotlib, Seaborn, OpenCV
Technologies/Frameworks: NextJs, ReactJS, Git, Expo Go, TailwindCSS, ExpressJs, MongoDB, Postman, Bootstrap, Figma, Canva, Adobe Photoshop

Coursework

Deep Learning Specialization **DeepLearning.AI, Coursera**

- Completed all Courses such as CNN's, Sequence Models, Hyper-parameter Tuning etc.

STAT110: Probability-Statistics **Harvard University, MOOC**

- Built foundation in Topics like: Random Variables and their Distributions, MGF's, 2-D LOTUS, Transformations, Conditional Expectation, Markov Chains etc

18.06: Linear Algebra **MIT, MOOC**

- Developed understanding in Topics like: Eigenvalues and Eigenvectors, Linear Transformations, Graphs and Networks, Markov Matrices, Fourier Series, The Fast Fourier Transform etc.

Advanced Python for Machine Learning **freeCodeCamp**

- Leveraged Python for data manipulation, analysis, and machine learning model development.
- Scikit-Learn: Applied various machine learning algorithms for classification and regression tasks. TensorFlow and PyTorch: Designed and implemented deep learning models for complex tasks.

Full Stack MERN Bootcamp **LearnCodeOnline.in**

- Crafted dynamic web app with HTML, CSS, and JavaScript, orchestrated server-side using Node.js and Express.js, and managed data landscapes in MongoDB.
- Brushstrokes of connectivity were RESTful API development, and state management with Redux; fortified security with authentication and authorization protocols using JwTs, achieving an integration of the frontend and backend.

Experience

City Scale Simulation **January 2023 – May 2023**

Prof. Adway Mitra, IIT Kharagpur *Kharagpur, West Bengal*

- City-scale Simulation of Covid-19 Pandemic and Intervention Policies using Agent-based Modelling
- Worked in the Software Development team to build the Simulator. Generated data forthe Emulation.
- Taking motivation from the Multivariate LSTM-FCNs for Time Series Classification paper devised and deployed different Encoder-Decoder, Sequence to Sequence Models.
- Trained the model with Encoder-Decoder Blocks and Bi-Conv-LSTM layers to predict the Positive Tested cases for a 200-day duration with an accuracy of 0.76.

PixelPlates: Calorie Estimation Through Images **August 2023 – Present**

Jamia Millia Islamia *New Delhi*

- Developing an Automated Calorie Estimation from Computer Vision to estimate calorie content from food pictures, addressing a global health challenge.
- Implemented Image Segmentation techniques to isolate individual food items within images, allowing precise analysis.
- Employed machine learning models to map extracted features to calorie estimates based on a comprehensive food database.
- Extracted relevant features from segmented food items, such as size, color, and texture, to characterize food content.
- Designing and optimizing the system for real-time usage on mobile devices, increasing accessibility and user-friendliness.

Personal Projects

Emotionally-Intellect ChatBot | *Python, PyTorch, Tensorflow, NLTK, spaCy* **September 2023- Present**

- Developing a chatbot system leveraging Natural Language Processing (NLP) to accurately anticipate and respond to users' emotions within text dialogues.
- Implemented machine learning models, such as recurrent neural networks (RNNs) and transformers, for emotion prediction.
- Utilized TensorFlow and PyTorch for developing and fine-tuning emotion prediction models.

Image Captioning | *Deep Learning, NLP, Python, RNNs* **May 2023**

- Deployed an Image Captioning model on Flickr8k dataset.
- Integrated CNNs- ResNet or Inception, for image feature extraction to enhance captioning accuracy.
- Used the Inception Net V3 as Encoder and a LSTM along with an embedding layer as the Decoderin PyTorch.

Facial Emotions Recognition | *OpenCV, Python, Deep Learning* **June 2023 – July 2023**

- Crafted a OpenCV-based system for the automatic recognition of emotions from facial expressions, enhancing human-computer interaction and sentiment analysis.
- Applied image preprocessing techniques, including face detection and alignment, to ensure optimal data quality.
- Combined facial emotion recognition with NLP for deeper sentiment analysis and emotion understanding.

Art Generation: Neural Style Transfer | *Deep Learning, CNNs* **June 2023 – July 2023**

- Used Transfer Learning to generate artistic images, taking references form the NST paper to use the hidden layer activation's of the VGG network.
- Implemented the corresponding cost functions from scratch in TensorFlow to optimize pixels of the generated image

Fracture Vision: Fracture Detection | *Deep Learning, PyTorch, Data Preprocessing* **August 2023 – Present**

- Used pre-trained models (e.g., ResNet, Inception) for feature extraction to improve model accuracy and reduce training time.
- Conducted data preprocessing tasks such as image resizing, normalization, and augmentation to enhance model performance.
- Rigorously evaluated model performance using metrics such as accuracy, precision, recall, F1 score, and ROC AUC, ensuring reliable fracture detection.

E-Commerce T-Shirt Website | *JavaScript, ReactJS, NodeJS, MongoDB* **July 2023 – September 2023**

- Used the MERN stack to build a robust and responsive and user-appealing web application.
- Implemented Authentication and enhanced security of the database using JsonWebToken, brcypt.js and Express-JWT

Disaster Response Coordination Application | *MERN, Machine Learning* **September 2023 – Present**

- Designed and developed a robust web application that centralizes and displays the real-time locations of various rescue and relief agencies during natural and man-made disasters.
- Incorporated geolocation services and APIs for real-time tracking and display of rescue agency locations on interactive maps.
- Employed data visualization libraries and frameworks such as D3.js, Flexmonster, and Chartkick to create insightful and interactive data representations.
- Utilized Machine Learning to analyze disaster data and provide data-driven recommendations for resource deployment and efficiency.

Achievements/Positions Of Responsibilities

- Played a key role in designing, developing, and maintaining **websites** for clients as a **Technical Team Member at 180DC-JMI**. Handled both **frontend and backend** development tasks, creating responsive designs and implementing interactive features. Conducted testing and debugging to ensure website functionality, performance, and security.
- Played a pivotal role in **organizing TEDxJMI 2023** as a core member of the team, overseeing logistics, scheduling, and venue coordination to ensure seamless execution. Cultivated relationships with attendees, speakers, volunteers, and sponsors, nurturing a TEDxJMI community passionate about ideas.
- **Authored** articles covering a wide range of topics, including events, cultural happenings, and academic insights across Delhi, as an **Editorial Team Member** at **The Jamia Review (TJR)**. Documented and archived event coverage, interviews, and **research reviews** for reference and **future publications.**
- Developed and executed a comprehensive technical content strategy as the **Content Head of IEEE-JMI** Chapter. Led a team of 15+ members, assigned them tasks and collaborated with cross-functional teams, including event coordinators, web developers, and graphic designers, to align content with organizational goals.