Northeastern University, Khoury College of Computer Sciences
Computer Science, MSCS
Personal Statement

Fascination with mathematics and science in the early years of my education sparked my interest in the field of technology. I often taught my classmates, watching many overcome their dislike for the subjects, which motivated me to pursue an education in STEM. When I was introduced to Computer Science electives in school, my eyes were opened to a new and innovative topic that continues to shape our world. I realized that pursuing an education and a career in this field would never leave me stagnant. This set me on the path to study Computer Science and attain a bachelor's degree from the prestigious Muffakham Jah College of Engineering and Technology in Hyderabad. My deep-rooted passion for Computer Science has so far culminated in several research projects and a 9.24 CGPA, and I am ready to take the next step in my higher studies.

In the long term, I aspire to make healthcare systems more efficient, reliable, and affordable to address the healthcare challenges in rural India where access to quality healthcare is limited. With my siblings opting for medicine studies, we envision founding a hospital that offers world-class facilities and leverages AI technology to provide quality care. By gaining a deeper understanding of computer science, I aim to develop AI solutions that improve healthcare delivery and patient outcomes. I aspire to become an AI engineer and a researcher in this field. The MS in Computer Science program at the Khoury College of Computer Sciences at Northeastern University will equip me with the skills and knowledge to create impactful changes and improve the lives of many in my community and beyond.

A wide array of subjects studied, assignments, projects, and research work I undertook during my undergraduate studies mirrored a holistic view of computer science. Courses like **Data Structures**, **Design and Analysis of Algorithms**, **Database Management Systems**, **Operating Systems**, and **Computer Networks** enabled me to set a strong foundation. Specialized courses in **Artificial Intelligence**, **Machine Learning**, **Data Science**, and **Data Mining** provided exposure to how AI systems work, how machines learn from data, and the different ways of storing data and retrieving meaningful information from data. Through the minor project in my sixth semester, I focused on using deep learning in the early detection and diagnosis of plant diseases for timely intervention. The project uses Convolution Neural Networks for image classification. Leveraging **TensorFlow** and **Keras**, the model processes input images of leaves to identify symptoms associated with various diseases. The full-stack web application, built with **React.js**, **Node.js**, **Express.js**, and **MongoDB**, features a marketplace for agricultural tools and seeds, real-time chat via **Socket.io**, and an AI chatbot for plant care queries. With the foundational knowledge from my undergraduate coursework, I am confident that I would successfully be able to apply and expand upon these concepts within the MS CS program.

I was selected to be a part of the **Microsoft Learn Student Ambassadors (MLSA) Program**, which selects on-campus student leaders and provides them with resources to develop technical and industrial skills. As part of the program, I got the opportunity to network with developers and fellow MLSA's from across the country, which helped me recognize the need to bring networking opportunities to students from my college. This motivated me to organize a technical event based on the **Software Development Lifecycle (SDLC)** at **Microsoft IDC, Hyderabad.** This event saw over 200+ attendees, offering them insights about SDLC from ideation to development to deployment to maintenance. Moreover, it provided networking opportunities with industry leaders and experts from Google and Microsoft. As an MLSA, I have conducted several workshops on diverse topics. I conducted a hands-on workshop aimed at teaching freshmen the basics of web technologies where I guided them through the process of creating and deploying their first website using GitHub Pages. In the second workshop, I introduced them to creating a chatbot using **Azure Language Service** and **Azure Bot Service**. My third workshop focused on **Azure AI's Custom Vision service**, teaching participants to build and train image classification models for real-world applications like medical diagnosis.

During the fifth semester, my team was selected in the prestigious **Smart India Hackathon (SIH) 2023**, a national-level Hackathon supported by the Ministry of Education under the patronage of the Prime Minister of India. Being chosen as a finalist placed our team among the top few selected from this vast talent pool. Furthermore, as the president of the Computer Society of India branch at MJCET, I organized the annual Hackathon in my college “Hack Revolution”. The hackathon attracted over three hundred participants from various colleges throughout the city. Initially, it was challenging to lead a team of sixty-plus members, but I am glad to see the team make active efforts in organizing the Hackathon, where we dealt with the entire process including marketing, sponsorships, and managing the participants smoothly. To equip students with the essential knowledge and skills required to participate in the hackathon, we successfully conducted three hands-on pre-hackathon workshops on Web development, App development, and Artificial Intelligence and Machine Learning inviting speakers from companies like Apple and PwC Australia.

My research paper on "**An Ensemble Learning Framework for Robust Cyberbullying Detection on Social Media**" has been accepted in **the International Journal of Engineering and Advanced Technology (IJEAT)** and is under publishing. The approach consists of three main models: BERT, LSTM, and Random Forest. This project deepened my technical skills in NLP and Machine Learning, strengthening my problem-solving skills in addressing real-world problems like cyberbullying detection. This research demonstrated to me the new leaf that we are turning in the AI world, and I am wildly excited to be at the forefront of this rapidly developing field. The **CS 6120** course on Natural Language Processing particularly interests me due to its in-depth exploration of **recurrent neural network language models (LSTM architectures)** and **attention-based models like Transformers**, which align directly with my research experience. Furthermore, my final year major project Smart Healthcare Research Assistant utilizes **Retrieval Augmented Generation (RAG)** technology to enhance the efficiency of medical research for healthcare professionals.

The MS CS program at the Khoury College of Computer Sciences, Northeastern University complements my intellectual curiosities and career aspirations for many reasons. Firstly, the MS CS program is a leader in offering the perfect blend of practical and classroom experience through the co-op program, which ranks among one of the best in the US and the world. Speaking with current students and alumni validated that the MS CS program is such an established program because it consistently produces graduates who secure positions at prestigious companies and cutting-edge research is conducted in the fields of Artificial Intelligence, Machine Learning, and Data Science. Secondly, I feel as though the coursework complements my technical needs better than any other program. The MS CS program at the Khoury College of Computer Sciences covers a broad curriculum where I will be able to brush up on the basics of **Algorithms** and **Programming Design Paradigm** before diving into more rigorous, familiar courses. My undergraduate studies have prepared for me classes such as **Natural Language Processing, Information Retrieval** and **Advanced Machine Learning**. Lastly, by pursuing the MS CS program from the Khoury College of Computer Sciences, I would be building upon my technical skillset from a world-renowned faculty in the epicenter of tech innovation.

Even though a career in Computer Science would never leave me stagnant, I need to proactively evolve with the field in a world that is constantly being disrupted, to be at the forefront of new and innovative solutions to best serve the community. My passion for Computer Science comes with a purpose to resolve real-world challenges in the field of healthcare particularly in India, and it is of key importance to obtain a level of expertise before I can pursue my long-term goal. I eagerly look forward to being part of Northeastern University as it is a reputed seat of learning and will enhance my educational experience. All these factors bolster my confidence that the Khoury College of Computer Sciences at Northeastern University is the place at which I would like to pursue further education.

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