Mohammed Sazzad Yousuf Sourab

Personal Statement

I have been wowed by the compactness of electronic equipment and gadgets like handheld mobile phones or media players since I was a child. I used to wonder how a small device the size of a human palm can perform so many tasks. I think since then, somewhere in the back of my mind, I always wanted to study a subject that would make me one of those brilliant minds who are involved in the design and development of electronic equipment and programming them. Later in high school, I showed aptitude in math and science, especially physics. So it is no accident that in 2017 when I got myself admitted into the country's top technological institution, Chittagong University of Engineering and Technology (CUET), after clearing arguably the toughest entrance exam in the country with flying colors, I chose to study Electronics and Telecommunication Engineering.

I was born and raised in an urban environment where I saw technological advancements and the impact of technology and devices. I was thrilled while using the devices and thought of developing those on my own. I was making a dream while I understood that choosing Engineering as an academic career could lead me to pursue my goal of becoming a developer of technologies that change the world. While doing my undergraduate I came to know that doing Ph.D. research can give me the opportunity to do what I was dreaming about from my childhood.

During my four years of undergraduate studies, I have had the privilege to be introduced to some of the most captivating topics of electronics and telecommunication engineering to my heart's content, that too by the best academicians and research figures of the country. I discovered my interest in Computer Programming later it turned into a fascination with Artificial Intelligence and Computer vision. First I started with the course named "*Project Design and Development*" where I used MATLAB to do an Image Processing project named "V*ehicle Licence Plate Detection and Recognition using MSER Algorithm*". This created my firm interest in Computer Vision and later I discovered that Artificial Intelligence plays a vital role in Computer Vision and ended up doing my undergraduate research thesis in combination of Deep Learning and Machine Learning. I find fascination in working with Biomedical Image data for image diagnosis purposes. My grades in related courses like *Neural and Fuzzy in Communication* and *Project*

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and Thesis all are A+ which goes to demonstrate my strong grip in Computer vision and Artificial Intelligence.

Undoubtedly the most memorable part of my UG studies was the 4.75 credit-hour thesis done throughout my senior year. This is when I first got into research and seriously started to consider a research career. I used my course knowledge and also I invested a lot of time in learning the basic topics in Machine learning and Deep Learning are cost function, backpropagation, multilevel perceptrons, convolutional neural network layers, activation functions, classification functions, loss function, regularization, feature extraction, overfitting and underfitting problems and their solutions, different machine learning algorithms, and their learning procedures. I liked to work with Tensorflow and Keras which led me to get expertise in Python and R language. Under the guidance of my undergraduate thesis supervisor, I started reading high-quality research papers understanding their methodologies, and learned to implement them in my thesis work. I aimed to develop a highly accurate classification and diagnosis method for Pneumonia using the Chest Radiogram dataset. The main challenge in this type of work in biomedical is we have to maintain higher accuracy than any other research because the research is directly related to human health. plasmonics. Under the guidance of my UG thesis supervisor, I started my research in a methodical way. We decided on a topic at our first meeting which was related to biomedical images, especially chest radiograms. The performance of my research output was comparable with other existing related works. I was awarded an A+ for my thesis work. I initially struggled a lot with the complexity of the simulation work but overcame it by diligently studying. I also published a Journal Article before my thesis was defended and the Journal was a top-ranked one. Though the published article represents only a portion of my thesis work. The article is named, "*A comparison of hybrid deep learning models for pneumonia diagnosis from chest radiograms.*", published in *Sensors International* journal in Volume 3. I believe it is just the beginning and I look forward to producing more high-quality publications in my career. My thesis was a journey full of ups and downs, lots of adrenaline rushes, moments of euphoria and frustration. I loved the roller coaster ride and somewhere in the middle of it I decided I wanted to be a research person in my life.

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In addition to academics, I was also involved with several volunteer organizations. I had been serving as a President of “CUET Photographic Society” and with several other organizations. I have gained responsibility and worked with a team while serving the organization.

After graduating from CUET, I started working in a Global Tech giant company “*Huawei Technologies Ltd*” where I worked as Cloud Solution Architect for a few days and learned a lot about how enterprises are using Cloud for their Enterprise Resource Planning (ERP) and learned to migrate cloud data from one cloud infrastructure to other. Later I joined a renowned Private university in Bangladesh named “*Daffodil International University*” as a Lecturer in the Department of Electronics and Telecommunication Engineering. I was thrilled to start this job because this has created scope for me to invest my time more in research and academy work. Working with my students on my research topic is such a pleasant job. I am also supervising three undergraduate students. I intend to work till this Fall 2023 semester and later I want to start my dream which is doing a Ph.D. at a higher-ranked university like Columbia University (Graduate Engineering). The Engineering Graduate Program of this university has a large number of faculties doing research in almost all aspects of Engineering and there are ample opportunities for doing research with industries. That’s what amazed me the most about this University.

Columbia University (Graduate Engineering) has active research groups working on the areas that enthrall me most. I’ve applied for a Ph.D. program in Computer Science at this university under the supervision of Professors who have a wide range of wisdom. After obtaining the Ph.D., my plan is to complete a post-doctorate to be more specialized in the specific research area, and then join academia as a professor because it is the right place for me to continue research.

Finally, I know there will be hurdles while pursuing a PhD. Still, I am confident enough to manage those through my endurance, resilience, critical thinking fast learning skills, and experiences if I get the chance to start my graduate study at Columbia University in Spring/Fall 2024 with the financial support of Graduate Assistantship or Funding.

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