

Statement of Purpose

It was a chilly winter morning when I first stepped into my university, very excited, as I had the opportunity to do my undergraduate in Computer Science and Engineering, something which I have always wanted to do. I would be mendacious if I say that I expected to be interested in fields like Computer Vision and Machine Learning at that time. However, as I had the opportunity to be closely acquainted with these fields later on, I found them so intriguing and nuanced that I made up my mind in building my career and conduct research in these fields. Years from now, I envision myself as a researcher in institutes that work on Computer Vision and Machine Learning.

My father being an electrical engineer, I grew up in an environment full of tools and electrical and electronic equipment. I used to watch my dad with awe working on circuits and fixing things. He introduced me to computer and taught me how to use it. He used to show me different hardware components and how they are assembled. As I grew up using computer, I was so amazed and fascinated by it that I aspired to become a graduate in Computer Science. My dream turned into reality when I got an opportunity to be admitted in the department of Computer Science and Engineering in Islamic University of Technology (IUT), one of the leading universities in Bangladesh. The admission process of IUT is extremely rigorous. Out of several thousands of students who apply here and sit for a highly competitive admission test, only 235 are selected to be admitted. Throughout my undergraduate studies I was put through intense academic pressure, having to take 181.5 credits, despite which I was able to successfully complete my undergraduate courses, securing second position in a highly competitive class of 47.

During my undergraduate studies, I found keen interest in subjects like Algorithm, Machine Learning, Artificial Intelligence and Image Processing. I still remember the excitement of learning new algorithms and implementing them to solve complex problems. When I was introduced to the course of Machine Learning in my junior years, I was deeply motivated by its underlying idea that computers can be made to "learn" things. It was amazing to see how the algorithms applied in AI and Machine Learning could give rise to the impression that the machines are intelligent and can logically respond to inputs. Later on, when I came across the course of Image Processing, I felt totally immersed into it and it drove me to explore further and work on it. Besides these, a wide range of programming and database management system courses provided me a firsthand learning experience on application development. I did several academic projects throughout my undergraduate studies which helped me not only in improving my development skills but also allowed me to have a deeper understanding of the respective courses. All of my projects were highly appreciated by the course instructors and earned me highest grade.

I elected to do my bachelor thesis in medical image processing. I proposed a mechanism for automatically detecting lung tumors from the CT images of lungs using textural features after segmenting the lung parenchyma. While doing my undergraduate thesis I came to know about Computer Vision, a field that intertwines Machine Learning and Image Processing. My thesis required the application of Computer Vision because classifying tumorous regions from CT images needed the system to learn. For my thesis, I had to devote hours on perusing many published papers on the fields related to my work, analyzing the solutions proposed

and learning new methods and algorithms. I used to ponder over the shortcomings of the papers and try to come up with a solution or improvement of my own. My undergraduate thesis helped me in realizing how meaningful a career in research can be. The more tangible benefits include a further grasp over the area of Image Processing and Machine Learning and an insight on how to conduct research properly. At the end of the final year, my thesis was well appreciated by the panel of professors to whom I defended it and I obtained the highest grade. Recently, my work has been accepted for publication in International Workshop on Feature Similarity and Learning for Computer Vision, in conjunction with 12th Asian Conference on Computer Vision 2014 (ACCV 2014).

Besides my academics, I was also one of the executive members of the IUT Computer Society which organizes National ICT fest every year where students from different universities all over the country come and participate in different ICT based contests. I was in charge of managing the programming contest and IT Business Idea contest in the fest held in 2013. This experience helped me to develop my organizational and interpersonal relationship skills. Alongside these, I actively participated in several programming contests during my undergraduate studies which helped a lot in my logic development. I was a member of the team that became champion in IUT Inter Departmental Programming Contest in 2012. I also participated in National ICPC in the same year.

After completing my Bachelor's degree, I joined Islamic University of Technology (IUT) as a lecturer in December 2013. I have conducted courses on Numerical Analysis and Database Management Systems and the corresponding labs. I have also conducted labs on Database Concepts and Programming, Office Automation, Visual Programming and Pattern Recognition. Career in teaching has helped me to learn how to express complex ideas in a simple manner so that it is easy for the students to understand. It has provided me valuable experience in teaching and allowed me a glaring opportunity to be in an environment that is congenial to research.

It was in this vein, that I decided to advance my career in research and it prompted my interest in the Ph.D. program at the department of Computer Science and Engineering in Ohio State University. I am well aware that the Ohio State is a top university and that it is one of the best research centers. The state-of-the-art research projects and facilities in the fields of Computer Vision, Applied Machine Learning and Auditory, Speech and Language Processing has motivated me to choose this highly esteemed university and pursue my higher studies. I am mostly interested in Computer Vision since this is close to the field in which I have done my Bachelor thesis and have the most experience in research. I am also interested to work in Applied Machine Learning and Auditory, Speech and Language Processing since they are closely related to Computer Vision, which itself is a specialized form of Machine Learning. I know that admission into this university is highly competitive, but I would like to consider myself as a potential candidate for the program because of my enthusiasm and zeal in conducting research in the respective fields and my eagerness to work hard.

I am very eager to work under and with some of the finest minds in Computer Science so that I may be able to conduct valuable research and increase the depth of my knowledge. I wish to earn a Ph.D. and follow this with a career in research. I hope that my background and qualifications would be suitable to enroll me into the Ph.D. program of Computer Science

at Stony Brook University.