Statement of Purpose

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Introduction

To predict the future for the field of technology is merely an impossible task. What will happen a hundred years from now will be a quixotic task to imagine. But from the prospect of present technological dynamics, I can assume that the next decades will be the time of advancing Machine Learning in the field of Computer Science and as well as Genetic Engineering. I am a Computer Science graduate willing to pursue PhD in Computer Science, fascinated with the upcoming advancements in this field of technology. It will be an adventure to be a part of this revolution in the field of Computer Science and learn it's theoretical and practical aspects. I believe, pursuing a PhD is the best option to be a part of this revolution.

Education and Research Experience

In the four years of my undergrad education, I have done three projects. My first project entitles Applet Scientific Calculator using Java programming language. It has all the computing abilities to calculate big multiplication and factorial. It was based on various number theory algorithms that I've learned throughout the first year of my programming courses.

My second project was based on Online Automatic Question Answering using Semantic Parsing and Lambda Calculus. It was my first project based on some reading of research papers on Natural Language Processing. This project would take any questions and parse it semantically, then answer the question based on learning experience as well as knowledge-base database implemented in Python 3 programming language.

My third project was on Anomaly Detection of an Algorithm's output result using supervised machine learning approach, where it finds the performance degradation of each step of an algorithm and predicts the anomaly in a certain step to come up with performance-boosting. That is, the output of every step will give feedback to the Machine Learning algorithm and predict the anomaly in the execution step to improve the algorithm further. This project was also implemented in Python 3.

In the early years of my undergraduate studies, I mainly focused to build a strong foundation on Data Structures and Algorithms. I solved various Competitive Programming problems on various online judge such as LightOJ, UVa Online Judge and later on Code-Forces. I took part in various National Collegiate Programming Contests for the first three consecutive years. In the final year, I concentrated on my undergrad research. The research is based on performance analysis of various supervised machine learning algorithms for text classification process in Natural Language Processing. This research, later got accepted in 19th International Conference on Computer, Information and Technology, 2016 and got 8 citations so far according to google scholar.

My research interest is related to Machine Learning and it's theoretical and mathematical model as well as the advancement to its practical applications. I am willing to take part in research that involves in building any sophisticated Machine Learning models and it's applications.

To build a strong foundation on Machine Learning, I completed two MOOC courses entitles "Machine Learning" and "Design and Analysis of Algorithms Part I" course in Coursera offered by Stanford University.

Currently, I'm working on a project based on detecting Complex Bengali Handwriting Recognition using Deep Learning technique.

Teaching Experience

As I have the experience of conducting undergrad course of Computer Science discipline at University of Asia Pacific, Bangladesh. I believe, it would help me to become a good researcher in the future. To be in teaching profession, I had to be always innovative in making new problem sets, evaluate students and give guidance and motivations according to their potentials. I enjoyed the challenge of this profession, because in this profession of teaching, I had to be always in a process of updating myself. I had to be always slightly better today than yesterday and always better tomorrow than today.

In teaching profession, I mainly conducted the course and lab entitles "Pattern Recognition", and this course is very much research-oriented. I enjoyed teaching of this course very much. I updated this course with the recent advancement of this field with the help of consultation from the senior faculty members of the university. I have learnt some new interesting stuff of this course as well e.g. Generative Adversarial Networks, Lagrange Multiplier method, etc.

Why I choose Texas State University

I choose Texas State University for pursuing my PhD for several important reasons. First, the Computer Science curriculum in Postgraduate level of this university is very much praiseworthy. I found that, this university has several faculty members whose research activities are aligned with my research interest. Secondly, the community of this university seems very friendly to me. Finally, this university has a beautiful campus. So, this would be a place where I would like to study and engage in research activities for the next 5 to 6 years and so on.

Concluding Remarks

After completing my PhD, my target is to ensure a position either in academia or industry that has the prospect of research and development based on my area of expertise.

So, I believe, I have the confidence, capabilities and enthusiasm to admit into PhD program of Computer Science offered by Texas State University. I would like to produce some impactful research that would make me a prospective graduate student for this degree at this university.