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SUBJECT: Statement of purpose for research internship at IST for summer 2020

As a kid who began coding since he was in fifth grade, I can safely say I am a computer nerd. I have been fascinated and enthralled by computers since I was a child. I find every little aspect of computer profusely amusing. The way it has revolutionized the modern era just goes on to show how important an invention it was. I have been a good student my entire life and have always among the top 5%. In my 12th National Board exams, I ranked 3rd in my state and 10th in my country among more than a million students. Then I cracked the prestigious JEE Mains and Advanced examinations to get my admission into one of the best Engineering colleges in my country i.e. Indian Institute of Technology, Kharagpur. The acceptance ratio is less than 0.1% (among more than a 1.5 million students appearing for the exam only 10000 students get through).

My studies now heavily revolve around core electronic subjects such as Digital Electronics, logic gates, and computer science subjects such as Algorithms and Data Structure, machine learning, deep learning, Parallel computing etc. I am a huge AI enthusiast and strongly agree with the words of Google CEO Sundar Pichai who also happens to be my college alumni that "AI is more profound than electricity or fire". I am heavily active in the domain of Data Science and Machine Learning and would like to do my part to help in the AI revolution. I understand that it is a fast-evolving field and to stay relevant I keep doing courses outside my college coursework. I have completed Andrew NG's course on Machine Learning and Deep Learning. I have also done 150+ hours of machine learning with applied AI course with 30+ Assignments.

Recently while using deep learning I was intrigued about how GPUs work and their architecture. I have taken up a course in my college by the name "High-Performance Parallel Programming" and have found it fascinating. I am quite handy when it comes to CUDA implementations and by the end of April, I will have completed the course and will have developed a real-world application project as part of the course where I bring a parallel program paradigm to a real-world problem. So ideally I would love to work with a machine-learning algorithm to apply my knowledge of parallelization and help in reducing the latency.

I have extensively worked with graph databases in NEO4J and aided in construction of academic genealogy project at my college under supervision of Dr. Plaban Kr Bhowmick, professor IIT Kharagpur. I have also experienced working with Django and Android development. I have done more than 3 months of internship on Django and Android development. I have made several mobile applications that have gone on to win national Hackathons organized by MNCs like HSBC and NVIDIA. One of my apps garnered huge media attention. The app is called Care4U. It is an elderly health care app that uses a neural net-based fall detection algorithm along with mood detection and a smart chatbot that fine-tunes its conversations with the mood of the elderly. I have also made an application that uses machine learning-based route optimization and real-time bus tracking for people. Here is a link to one of the news article in one of the most renowned newspapers of the country IndiaToday about my application :

<https://www.indiatoday.in/education-today/news/story/iit-kharagpur-students-create-ai-mobile-app-for-elderly-which-can-become-a-digital-caregiver-1572304-2019-07-22>

I am highly motivated, hardworking and passionate. I believe my main virtue is my willingness to learn from everywhere and everyone that I get an opportunity from. If I don't know something I will put all my efforts into learning it. Therefore I believe I will be a good fit for the research intern role at hand and if selected it would be a humongous opportunity for me to learn from the best in the world and grow in my research career.