Statement of Purpose

I have always tried to appreciate the little things in my seemingly ordinary life. However, I wasn’t well aware of the various ways in which technology can solve problems that are often disregarded. As rightly stated in ‘The Laws Of Simplicity’ by John Maeda, simplicity is about subtracting the obvious, and adding the meaningful. I followed this rule while solving an issue that I came across when my father knowingly overlooked the terms and conditions to expedite the installation of an application. Much to my surprise, after in-depth study of information retrieval systems, I realised that my thought process could most certainly yield results. This seemingly never-ending thirst for knowledge and solutions is what helped me develop a rule-based system which summarizes the terms and conditions by filtering out the most important ones for the user. My work was awarded the first prize in the Merge Hackathon amongst 30 teams following which I also received a mentorship opportunity to continue my project. The mere urge to explore the vast network of applications that underlying algorithms possess led me to pursue my interest in this domain.

Taking inspiration from the aforementioned project, I went on to engage in solving problems pertinent to the legal domain as can be seen in my final year project, titled ‘Precedent Retrieval of Legal Documents’. Our model was aimed at assisting lawyers by suggesting the most relevant precedents for all legal cases. I grew familiar with neural networks and consequently made use of LSTM networks in the project. Our research on these models is documented in a technical paper which will be published at the ICTCS Conference, Springer. If the current state of Machine Learning is as exciting as it is, its future scope keeps me keen and inquisitive.

To get a pragmatic view of software development, I joined IIT Bombay as an intern under distinguished Prof. Nagesh Karmalli. I got to work on an open source project named ‘E-sim on Cloud’, which is a system that allows users to draw as well as simulate analog and digital circuits. My key contributions were extending the prevailing functionality of the existing eSim on Cloud project by adding features like Versioning and Favourite Components. Also, I helped to provide quality improvements to the LTI support and currently working on the autograding module. I personally cherished this experience and feel that I’ll be able to procure more such opportunities while pursuing a master’s degree program in computer science.

My affinity towards Machine Learning landed me an internship at JP Morgan Chase & Co. Being assigned with the task to develop a fully functional conversational chatbot for their internal case management application was quite an ordeal, since I had no prior relevant experience. But attending a seminar on ‘better behaved conversational agents’ by Y-Lan Boureau pointed me in the right direction. Using the DIET Classifier for intent classification and CRFs for entity extraction rendered the most appropriate results. This experience made me realize how imperative it is to ensure immaculate dialogue intent and named entity recognition techniques in interactive systems. Having augmented my knowledge base as well as interest span in Natural Language Programming, this internship furthered my desire to pursue a Master’s in Computer Science.

The course curriculum of my undergraduate degree paved the way to the graduation subjects that I intend to take up. Advanced Math courses sharpened my quantitative skills in calculus, probability, linear and vector algebra. Enrolling for Younes Mourri’s NLP certification on coursera was a good starting point. A minor course of Data Analytics by IBM quite wholly rounded my understanding of ML and its application. Having attained a much more in-depth understanding in ML & its intricacies, I wrote a well-researched technical paper on the topic ‘Sentiment Analysis of Twitch.tv Live Stream messages using Machine Learning methods’, which I presented at ICEEET Conference, IEEE Explore. The knowledge gained through this research paper proved to be useful in my senior year projects.

My core belief lies in the fact that holistic personal development is integral to ensure professional success. I have always embraced my potential, skills and tried to hone them as well as I can – be it when I was a silver medallist at state level swimming or a national level swimmer. As the events head of the Alumni Coordination Committee at college, I successfully organized and hosted a good number of events during my tenure. In my junior year, I mentored numerous underclassmen with the knowledge and experience involved in software development that I had garnered. Moreover, I was invited to mentor the participants of Shell Hacks 2020, hosted by Florida International University. While being an active volunteer at DJNSS, the social service unit of our college, I helped in planning and organizing events like a blood donation drive, a 7-day social service camp at an adopted village, a tree plantation drive and more…

My academic and professional experiences have helped me envisage a career as a software developer in leading tech companies where I would be involved in developing novel software applications based on emerging technologies such as Machine Learning and NLP that cater to real-world problems and are secure, scalable and reliable. In the long term, I aspire to establish a globally acclaimed company that designs intelligent solutions for the legal tech industry. To bring my ambitions to fruition, I recognize the need to equip myself with specialized knowledge through a Master’s in Computer Science from Penn Engineering, University of Pennsylvania .

Thanks to the considerable experience I have amassed through my above-mentioned pursuits, I now wish to broaden my outlook by pursuing an MS in Computer Science from your esteemed University. Being a part of the Cognitive computation group will provide me an excellent opportunity to apply my knowledge to solve real world problems. The well-rounded curriculum (with subjects like Computational Linguistics , Machine Learning and Reasoning for NLU) will give me deep insights into Computer Science. I look forward to work with Prof. Chris Callison-Burch, renowned for his research in Natural Language Processing. Similarly impressed by Prof. Dan Roth’s research on Information Extraction and Semantic Parsing, I would love the prospect of contributing to the ongoing research. I’m very excited to start a new chapter with Penn Engineering and I’m clearly intent on proving my worth on a higher level such as this.

The experiences and knowledge that I gain in the graduate program, coupled with the resources and opportunities, will help me achieve my career goals and also realise the goals of like-minded people at your renowned University.

Application of AI and NLP in the Indian Judiciary System and how AI can be used  
to supplement the courts.  
Implemented several summarization models using ML and DL to summarize lengthy case documents and compared their results.  
Implemented a model to predict an outcome of a case, given the case detail

Currently, to pursue my interest in the legal domain, i am working at IIT Delhi as a research intern under the guidance of Prof. Amit Sehgal and Prof. Brejesh Lal. We are exploring the application of AI and NLP in the Indian Judiciary System and how AI can be used to supplement the courts.