

My journey in the field of machine learning began when I attended an interview to join one of the four prestigious technical clubs at NITK, the IEEE club. In this interview, I was asked by an interviewer about machine learning and at that time, I didn't know much about this topic. He then went on to briefly explain what machine learning basically aims to achieve and this proved to be the first step of my path towards machine learning. Later, I took several online courses on machine learning and ensured that all my research projects and internships were related to this field. I grasped the concepts quickly due to my aptitude for logical reasoning and mathematics, which intensified my passion for machine learning. Around this time, a data science company known as Dataphi conducted several Data Science Hackathons in my college. My team, known as DataDons, won the competition and I was awarded a chance to do an internship at the company and be a part of real world projects in the domain of data science. This experience gave me deep insights in the recent technological innovations so much so that I was given the opportunity to guide my juniors on machine learning projects during my final undergraduate year. Currently, working on the development of machine learning models for the early detection of Parkinson's disease and asthma, I have realized the potential of machine learning technologies in various industries and I wish to create advanced and intelligent systems for the benefit of people. I strongly believe that a postgraduate program in Machine Learning and Data Science will help me develop a global perspective of the field and build a strong skill set using which I will be able to fulfill my career goals.

Being a lover of puzzles and logical reasoning activities, I wanted to specialize in a stream that involved more analytical thinking and less theory. For this reason, after completing high school, I decided to pursue my undergraduate studies in Computer Engineering. Needless to say, my favourite courses during my undergraduate period were Data Structures and Algorithms, Advanced Data Structures, and Machine Intelligence as they introduced me to the amazing concepts of data science and machine learning. I also enjoyed other subjects such as Digital Image Processing, Computer Programming, and Probability Theory and Applications as they were quite algorithmic and thought-provoking, and as a result very challenging to me.

During my classes, I realized that programming was one of the most basic ways to develop intelligent systems and I wanted to acquire in-depth expertise in writing smart codes. Hence, I decided to program a game, Cows and Bulls, where the player had to guess a 4-letter word based on the given clues. Once this was done, I attempted to make the computer guess the word that the player had in mind by writing a suitable program. Although this problem could be solved by using maps, I did it with the help of programming after learning only the basics and this experience instilled a sense of achievement in me and a desire to develop more advanced systems.

Having grown up watching my father work at the stock market trading stocks, I was aware of the excruciatingly long process of waiting for changes in the prices of the stock, and I wanted to develop a predictive analytics system that could make this process easier. This motivated me to create an Inter-Sector Stock Analysis system that could analyze how trends in one market sector influenced stock prices in the other sectors. While creating this system, I learnt important concepts of stock market trading such as P/E ratios, sector fluctuations, options, and futures. Eventually, I went on to complete a nanodegree

at Udacity on quantitative trading through which I acquired clarity on how machine learning systems could enhance our understanding of stock market fluctuations.

During the second year of my undergraduate studies, I developed a deep interest in computer networks and I wanted to gain a better understanding of network concepts and the version-control system. To achieve this, I made an open-source contribution to the ns3 project, learning the fundamentals of version-control and specifics of reverse nat in the process. I had started gaining familiarity in Computer Vision in my third year and I was further interested in using the concepts to solve a real-time problem in object tracking. I wanted to enable typing for people without limbs and so, I developed a system where people could just use their gaze to type by moving their eyes from one key to the next. Due to a lot of reasons, this project could not be implemented completely as the results were not consistent; however, I got a thorough understanding of the obstacles involved in high precision eye-tracking.

By this time, I had received a lot of exposure in the fields of data science and machine learning, and I was extremely eager to work on data mining and data analytics. Around this period, I had come to know about a news app, InShorts, which displayed extremely short news articles to users. This summarization was done manually which was time-consuming and costed a lot of labour for the company. In an attempt to automate the process of text summarization, I proposed using Natural Language Processing techniques to summarize a given piece of content in a desired number of words. In order to maximize my chances of success, I used two approaches – Extractive Summarization which ranked sentences based on their importance and used these words to summarize the text, and Abstractive Summarization which used Recurrent Neural Networks (RNN), Long Short Term Memory, and Transformer Networks to summarize the text. Both these approaches opened up huge learning opportunities for me and introduced me to the fascinating applications of machine learning and deep learning systems in the field of automation.

After participating and winning a series of Data Science Hackathons conducted by Dataphi Labs, I was motivated to do an internship here to get further insights in the real world projects in data science. Here, I got the chance to work on fitness-tracker data along with user chat data with their personal trainers, using which I analyzed the factors that increased user engagement on the platform. The availability of both structured and unstructured user data appeared interesting and challenging, and promised to be a major learning experience for me. Using this data, I predicted the probability of members' renewal for a fitness company through sentiment analysis and their activity on the fitness tracker platform. Working on this project, I learnt about tree models in machine learning and how to mine information from raw textual data. Eager to further understand the techniques used in data mining, I was partially involved in a couple of other projects at Dataphi. One of them was to build statistical models for the prediction of revenue in the subsequent quarter, for which I learned and implemented ARIMA and its variants to capture seasonal changes in the revenue achievables. The other project was the development of a personalized scheduler where users' diary logs were used to predict their productivity during a day and suggest patterns of activities that users must avoid to be more productive. This project made me realize the immense amount of data that is present in unstructured

data formats such as normal text. Aside from this, I developed a strong understanding of the commonly used techniques and methodologies in data science for the purposes of data extraction, data mining, and data analytics.

Apart from my undergraduate coursework, I took several initiatives to meet like-minded people and learn about the most recent technological innovations from them. One of these initiatives was to join the IEEE club at NITK where I had the opportunity to get involved in exciting research projects and guide my juniors on several topics. I conducted several online courses on Python and Applied Python, helping students understand Python programming and apply it practically through a project. One of my club members was an avid football follower and interested in working in a data science problem statement, we decided to mine news articles to analyze transfer rumours based on squad dynamics and financial conditions to predict the probable rate of a successful transfer. As the mentor as well as a team member for this project, I developed strong leadership qualities and communication skills, and learned to plan work systematically and complete project tasks within deadlines.

After completing my undergraduate studies, I was clear that I wanted to continue my work in the field of data science and I had a choice between Dataphi and Myntra. Impressed by the volume of data that was processed at Myntra and the quality of its ongoing projects, I decided to work here as a Software Engineer in the Analytics Division. Here, I worked on the efficient storage, retrieval, and visualization of the incoming data at my company using Apache Kafka and worked on query optimization for internal frameworks, through which I learned extensively about read optimization. I also developed a stronghold in distributed computing and distributed data processing through working on AWS and Apache Spark. In order to make computing more efficient, I collaborated with experienced colleagues and used the HyperLogLog (HLL) algorithm to find out the approximate number of unique visitors on the company website. During my work period here, I acquired a very good understanding of the industry and how data moves around in a company's internal framework.

After working on data for some time, I was interested in using this data for building machine learning models and so, I requested my manager at Myntra to be allocated on these types of projects. My request was turned down repeatedly and eventually, I decided to move on to a company where I could combine my knowledge of both data science and machine learning to develop intelligent systems with potentially far-reaching applications. Around this time, I came across a position for a Research Assistant for Machine Learning at the Indian Institute of Science, Bangalore, and I felt that this could turn out to be the perfect professional experience for me. From the time I joined this laboratory, I have been working at SPIRE lab in the Electronics Engineering department, trying to synthesize head gestures using speech. I recorded head gestures using Motion Capture devices and speech using a microphone, and based on cues from speech, I worked on synthesizing head gestures. In the process, I learnt several speech-specific features and Euler angles. As an extension of this project, I also worked on automatic speaker identification using head gestures, the results of which I have submitted to the ICASSP-2020 conference. Apart from working on machine learning models, I manage the website for my laboratory as per industry standards and use version control for code and efficient data storage as I had learned at Myntra.

During my work period at IISc, I have acquired immense knowledge in developing machine learning models for various significant applications. Apart from my research projects, I deeply enjoy my laboratory's weekly discussions where all students, research assistants, and interns get together and share their work, discussing any challenges and future directions of their projects. The intensity and depth of these discussions keeps me grounded in my concepts and motivates me to learn more about this field.

Inspired by the concepts and applications of machine learning and data science in the real world, I have constantly strived to explore these fields through research projects, internships, hackathons, club memberships, and work positions. Having directly witnessed how work done in academia has implications in the industry, I have developed an intense passion to contribute to automation technologies at the industrial level. At this time, pursuing a postgraduate education will help me learn my areas of interest in depth, giving me a better perspective of the fields that will hopefully lead to path-breaking innovations in the future. After completing my higher studies, I would like to work as a Software Developer or a Data Scientist in the domain of Machine Learning focusing on research with emphasis on its practical applications and impact in the real world. Eventually, I would like to establish my own company in the domain of Artificial Intelligence after pursuing my doctoral studies so that I am equipped with in-depth knowledge on the most recent trends in the field.

In order to pursue my career in the research of machine learning models for real world applications, I wish to take up a postgraduate program specializing in Machine Learning and Data Science at _____ University. The numerous research projects that I have worked on during my undergraduate period have given me a strong command over the concepts. I now wish to deepen my understanding of the field and become up-to-date with the most recent trends in machine learning and data science. I intend to acquire a strong skill set by pursuing several exciting and challenging projects at your state-of-the-art research facilities. Being guided by accomplished faculty such as _____ and _____ at your premises will help me take my projects to the next level and acquire a more comprehensive understanding of the field.

My experiences in implementing concepts of machine learning for various real world applications have given me a strong knowledge of my subjects, and I am confident that my aptitude and passion for data science will help me stand out at your campus.