

## **Statement of Purpose**

I was born and raised in a family where education was given the topmost priority. My father, being a banking manager, has always valued education above everything else. My parents served as a source of inspiration throughout my schooling. Their contributions in respective fields made me realize how the education can shape a society.

During my childhood days, I used to enjoy the Information Technology lab. I was very fond of Computers at that time. I used to play lot of games, surf the internet, and do lab assignment with MS word and MS Excel for tally, use formulas to automate the tasks on my personal computer which caused me wonder what happens behind the scenes. How can we save the Excel document and edit it the other day from where we left? How do the checkpoints in games like Mario, Call of Duty work? All these quires resolved after I was acquainted with basics of computer architecture, data flow through school course 'Information and communication technology'. I was intrigued by programming languages to transform the real-world experience into the code. I learned C language, when I was in 12<sup>th</sup> standard. I used to keep tally of family household accounts using C program. My rising curiosity towards the computer architecture and programming influenced me to pursue an undergraduate degree in Computer Science and Engineering, which was inevitable.

In the first-year of undergraduate, I started to learn Data structures and algorithms which provided an impetus to get started with competitive coding. I developed a penchant for competitive programming during my 2<sup>nd</sup> year of undergraduate program and resorted to platforms like Codechef and HackerRank for solving competitive coding problems. Throughout the undergraduate program, I studied important courses like Database management system, cyber security, Machine learning, and Artificial intelligence. These courses, in combination with competitive coding, helped me to earn internship at 'College of Engineering Pune'. I studied Machine Learning & Artificial Intelligence, completed the project 'Identify the ratings/popularity through comments' using python scraping. Internship added more fuel to my inquisitiveness towards machine learning journey.

As a part of curriculum, I worked on many projects that enhanced my technical repertoire. Such as, project titled 'Online Learning and teaching platform', I designed and developed web application. After adding more features to the application, it ends up becoming ultimate portal for student activities such as uploading weekly assignments. This was my first successful attempt towards designing a solution to a real-world problem. In my 3<sup>rd</sup> year, I participated in E-YANTRA (National Students Contest) at IIT Bombay, on Ant-Bot robotics project to perform specified automated tasks. As a team lead, I had the responsibility of completing tasks before deadlines, which was challenging. We completed automated tasks with optimized coding to improve execution time of Ant-Bot.

Exposure to concepts like data visualization, data science and data analysis, Image processing laid to basic foundations for my further explorations and persuaded me to do more projects. Teaching computers to make decision is more difficult task, and real-time precise decision-making skill is vastly encountered while playing games. So, I chose project entitled 'Reinforcement Gameplay of Mario', curiously developed AI powered gameplay using reinforcement learning using Lua language. The project involved to train neural network, and

choose optimal path for winning. Another Image processing project, 'Online toll collection of vehicles by scanning number plates'. In this activity, as a team leader. I had to use CNN models like VGG-16 and YOLO were used for extracting visual features from video OCR model to get number plate in text. Which further used to process payment by deducting toll from linked bank account. I completed KPIT hackathon 2020 named 'Alexa Enabled Voice Controlled Devices in Car', a voice-controlled system that operates on user's voice command using amazon-Alexa to communicate with car equipment. As a team lead, this project helped me improve my decision-making skills with respect to project planning, delegating tasks, and choosing an appropriate methodology.

After completing my undergraduate studies, I joined Rheal software as a full-time junior software developer. In 9 months of work experience at Rheal, I worked on development of Health care management software. I was entrusted with responsibilities like designing reusable features, developing client-specific features, APIs, and database handling. After that I worked in 'E-venu computers' as Full-stack developer, developed product supply chain management system, implemented web & server optimizing techniques. Since October 2022, I have been working as a full-time Data Scientist at Flairminds Software in Pune, where I specialize in building machine learning models for natural language processing and computer vision. While I could apply concepts that I learned, the reliance on seniors & online articles for certain topics like deep learning, neural network provided me with a motive to pursue higher education.

While managing the office work, I dedicated my time to studying complex AI concepts and their applications. For more advanced and detailed learning as well as research-oriented study, I had to avail other sources of information. For more advanced and detailed learning as well as research-oriented study online articles and forums are not enough, I realized that a systematic study in this domain would better equip me with the required skillsets. This would, in turn, open up new research opportunities. This further reiterated my feelings to pursue Masters of Science in Computer Science. An in-depth understanding of concepts like hyper-parameter tuning, regularization, and optimisation would help me structure and optimize AI and ML projects. With graduate studies, I would be able to acquire a skillset to work in the field of AI and ML.

Doing masters in United States will surely foster my career. I want to be a part of a progressive community and contribute towards the age of evolution. The United States of America is an undisputed leader of technology. Scientific innovations are embedded in America's culture culminating in the production of thousands of quality innovations. Being part of such a country would surely be a blessing for me and for my career.

At New Jersey Institute of technology, I intent to enhance my technical skills as well as perform research in field of AI and ML. Prof. James Calvin work on single variable bi-objective optimization algorithm is quite fascinating. I am intrigued by research studies of Prof. Chengjun Liu on A New Cast Shadow Detection Method for Traffic Surveillance Video Analysis. I would love to work under guidance of such professors. Thus, New Jersey Institute of technology would be an ideal choice for my graduate studies and would help me fast-track my career goals.

I hope the admission committee will consider me a suitable candidate for MS in Computer Science program.