According to me, the perfect blend of software and hardware has found its most superior application in the field of Robotics. The very process by which data provided by sensors is processed by software to provide specific instructions to a robot is fascinating, to say the least. One of the most significant applications of this technology - autonomous navigation through driverless cars moving without any human interference has amazed me through its sheer scope of technological advancement. The more beneficial applications of robots where they are used in rescue operations or drones helping people in remote and humanly inaccessible areas has sparked my interest in exploring this field as a means of making human lives significantly easier. Another area that is of personal relevance to me is Agriculture, and I want to make use of robotic technology to automate laborious agricultural tasks. As a first step to building a strong career in Robotics, I wish to pursue a postgraduate degree in this field in order to build a strong knowledge base and an industry-relevant skill set.

Since childhood, I have always been curious about the electronic gadgets we use regularly, and have wanted to explore their hardware and software components. In order to satiate my curiosity about electrical systems and electronics, I decided to pursue my undergraduate studies in Electronics and Communication Engineering from Vellore Institute of Technology. During this period, I honed my skills in Computer Science through my course on Computer Organization and Architecture, where I learnt about the architecture and organization of computers and operating systems. Mathematics has always been my strong point, and during my Bachelors, I became adept in algebra and calculus. I also acquired good practical skills in programming using C and microcontrollers.

One of the emerging fields that fascinated me during my undergraduate studies was Internet of Things (IoT), and in order to explore this field further, I decided to develop a prototype of an IoT-based safety, security, and sensing system. The objective of this system was to maintain safety and security, and to sense conditions in and around a house using Bluetooth technology and Internet. I used sensors such as rain sensor, gas sensor, soil hygroscopic sensor, and temperature sensor and information was transferred through Bluetooth using serial communication. An RFID was used for securing the home at the entrance and all the electrical loads were displayed on a Smartphone interfaced using a Bluetooth module. Through this project, I gained in-depth knowledge about hardware components such as microcontrollers, EEPROMs, A/D and D/A converters, I/O interfaces, and other similar peripherals in embedded systems. Enabling communication between these devices via Bluetooth and Internet helped me acquire a combination of knowledge of electronics and communication, and I was able to obtain a complete overview of the type of research projects carried out in the real world.

After gaining confidence through my project on safety and security, I decided to pursue a field that would be more beneficial to humankind. Hence, I undertook a project on the development of an Intelligent Agricultural Robot, which could irrigate farms with minimal amount of water and human effort. I chose a particular farmland and programmed the robot so that it was aware of the location of trees. The robot could also get the live status of humidity and temperature differences through the presence of sensors. A camera attached to the robot could detect diseases in the plant and the level of ripeness in the fruit. This project was monumental in helping me achieve a complete understanding of concepts in Robotics such as Computer Vision, IoT, and Path Planning. My knowledge of programming deepened considerably and I was able to understand how to practically deploy software for the purpose of developing artificial intelligence systems.

As is every telecommunication student's dream, I too wanted to visit the leading telecommunications company in India, BSNL, and understand communication networks implemented by this company. I was fortunate enough to get this opportunity and I acquired hands-on experience on all the theoretical concepts I had learnt in my coursework regarding communication technologies. This experience helped me present a review paper on WLAN technology at the SET Conference conducted at our college. In addition to acquiring technical expertise, I was also able to develop my communication and presentation skills.

As my passion in Robotics had greatly escalated during my Bachelors, I started working at MathWorks after completing my undergraduate program. Initially, I was responsible for implementing ORB Feature Detection and Extraction in MATLAB, through which I learnt all about the different feature extraction techniques available and their applications. Following this, I started working on the implementation of ORB-Slam in MATLAB, through which I learnt the SLAM algorithm and visual SLAM techniques. My knowledge of Path Planning acquired during my undergraduate project was reinforced at my workplace, where I implemented different Path Planning algorithms for a project. I also worked on MAVLink Log File Reader, where I learnt about the implementation and usage of MAVLink protocol and the format of the MAVLink Log File. I developed a library of robots in MATLAB, and am currently working on trajectory generation of Unmanned Aerial Vehicles. All my projects in the past one year have fuelled my interest in Robotics and I have gained in-depth practical knowledge of various relevant algorithms and methodologies.

Although my undergraduate education has been in the field of Electronics and Telecommunication, my childhood passion in Robotics has been reinforced time and again through projects and discussions with my colleagues. My robotic systems-related projects have particularly made me realize the unlimited possibilities in various sectors such as healthcare, communications, and agriculture, and I now intend to expand my knowledge base through a postgraduate program in Robotics. After completing my Masters, I intend to work in the domain of autonomous navigation and use my knowledge to program robots for this purpose. Eventually, I would like to establish my own company where I intend to work in the Agriculture sector, developing intelligent robots for helping farmers with laborious manual tasks.

As it is said, the people who think they can change the world are often the ones that do. I dream of using Robotic technology for solving problems that plague humans today, and as a first step in this direction, I intend to pursue a Masters in Robotics from your University. This field is still developing in terms of technological possibilities, and I am aware that your institution is one of the few places where pioneering research is taking place in this field. I am confident that your work culture and progressive environment will enable me to develop a strong professional profile and in-depth technical expertise, using which I will be able to successfully fulfill my future objectives. In turn, my strong work experience in this field has made me adept in several current technologies, and I will be able to contribute immensely to your current ongoing projects and future breakthroughs in Robotics.

Given my intense passion for Robotics and my long-term vision of using Robotic technology for introducing automation in Agriculture, I aim to develop a diverse skill set and expert knowledge in the subject through your postgraduate program.