**Statement of Purpose**

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Master’s in computer science

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When I was teen, my brother used to do many things related to Electronics and Electrical like creating a Home Inverter for our home and repairing all sorts of electrical devices at home. I used to help him like cutting the wires and soldering wires to a circuit board. Moreover, I remember when I used to abominate my brother as he reverse engineer all my new toys and add extra connections to make the motors run faster by connecting multiple batteries or do some other kind of customizations like converting normal speakers to Bluetooth by adding two different products . Although my brother didn’t have any Engineering degree, he showed me how we can customize, reuse and ameliorate the things as per our needs. So, with time the interest and zeal to assimilate electronics was already inculcated in me which made me to choose Science Subjects in High School, further performing well in high school led me to pursue Bachelor of Technology in Electronics and communication Engineering at Chandigarh Engineering College, Chandigarh. This course helped me to keep abreast of various Electronics subjects and Programming languages.

During my under-graduation, I learned about Robotics, Analog, Digital Electronics and various programming languages like Embedded C and C++. I was intrigued by all Electronics subjects but the one’s that captivated me the most were linked to coding and controlling the Hardware by user’s commands. NotwithstandingI was oblivious to programming when I joined the course, as I advanced through the years and started learning programming, it fascinated me a lot as I was not cramming but comprehending it for my practical uses. Perhaps this was the time when I assimilated the power of hardware and software in conjunction to make an automated systems and I plunged into 2 months internship in Robotics primarily on VHDL(VHSIC-HDL, Very High Speed Integrated Circuit Hardware Description Language) and created my first Robotic car which was controlled using android app. At this juncture, I was so accustomed to electronics and embedded system that I converted the dependent Home Inverter created by my brother to Self-Governing Inverter using sensors and Backend software and thereby I taught few things to my brother regarding programming and other electronics concepts to develop wireless home automation. When I was exposed to OOPS (Object-Oriented Programming System) and other programming languages profoundly, it facilitated me to apprehend the actual power of writing manageable, reusable codes and the usage of various other programming concepts. I got acquainted with how various Internet sites are developed, data algorithms behind their operations, how our computer applications are developed and are executed on operating system, so I opted for 6 months Industrial Training at HCL where I was enlightened about various Controllers(8051, Arduino, AVR, ARM) and programming languages like java, Embedded C etc. and here I designed “WEB Server Based AUTOMATION using Ethernet Shield” which helps in controlling devices in real time from different locations. In this project I used the Ethernet Shield module, Arduino controller and created a web page using HTML/CSS where all controls like fans, Bulbs and LCD’s were shown, so using the web address a user can control the system from anywhere in the world. During Internship, based on my performance and grasp on coding, I got an assistantship in HCL to help teach my peers to write and understand the code exhaustively. During the final year, my college conducted one programming contest to select top 100 students for ELITE group for Computer Science that aims to teach concepts of programming and training the students for industry level coding standards as well as different software cycles to be followed for the development of the software application. Albeit being from electronics department it was bit difficult to prove my competency, I got selected for this group because of my excellent coding skills and desire to learn.

After completing my under-graduation, I joined John Deere, Pune as a Graduate Engineer Trainee in Embedded System and I was the only one from my state who got selected to work for this department. Based on my Outstanding research performance on machines and technologies, I got selected for 6 months Innovation program to research in diverse groundbreaking areas to ameliorate the quality of existing machines and to ferret out innovative and unprecedented solutions. During the Innovation program period, I filed 2 Invention Disclosures in John Deere and received “*WOW*” Award which is given for excellence in performance. At the end of first year I got nominated for “*Budding Talent of the year*” Award in John Deere which is given for best trainee of the year. Because of my perspicacity I got opportunity to work with various teams to learn different modelling and project management techniques, in its entirety I worked with four different Software Development teams situated in United States. The first team was Software Development Team in which I worked for 1 year and my responsibilities accompanied creating windows and Web based automation tools where I cultivated my knowledge about advance programming languages (c#, Python), implementing Data Algorithms, Html, Handling SQL Databases and different software life cycles. The second one was ACE(AUTOSAR Configuration Expert) team in which I worked for the next 1 year and was responsible for automating AUTOSAR which develops the standardized software framework that improves quality, performance, safety, and environmental friendliness which helps to release better products in market in much faster rate. In this team I got an opportunity to glean best object-oriented programming practices from veteran programmers and received the feedback at every level of development which helped me to gain profound knowledge of implementing Design Patterns and reusable code. My core responsibility in this project was to work on Groovy scripts and GUI framework to create an environment for automatic configuration of all the layers of AUTOSAR, generating codes and finally integrating all the layers to generate the final output to be dumped into the controller on single click. Moreover, I got an exposure of parallel programming and the best practices for having multiple developers working on the same project. The Third was NMAS (Network Management Architecture Services) team, where I worked for 2 years under the guidance of Networking/Systems Engineering Expert and got an opportunity to acquire system engineering knowledge as well as modelling the machines at System level. I was delegated as a lead from India for this team and learnt best practices to document the systems and Development tools using MagicDraw tool. Moreover, my major responsibility in this team was to develop Rich GUI applications in advanced programming languages like C#, Python etc. using WPF and ReactUI frameworks for parsing and displaying complex files from databases and converting the files to readable formats like Xml to Excel and vice versa. The fourth was SETI (Software Engineers Tools Infrastructure) team which is responsible for creating innovative programming solutions for various John Deere platform teams, in this team I worked as a Senior Software Developer for building Robust Windows Applications in WPF/MVVM and writing unit test cases. I learnt different third-party libraries like DevExpress, Microsoft’s Msagl for creating extensive testable Windows applications. As with time I had got an expertise in programming, I had participated in yearly event Hackathon in John Deere where I presented one idea about Automating all John Deere offices to be tracked using mobile app in which the user will enter the desk location number and using the phone camera and computer vision the virtual blocks and signs will be dropped which can be seen by the user to reach to the location without wasting time, the further extension was to open the app camera of the mobile and direct towards any room to get the information about whether this room is free or booked, this is achieved by connecting app with Microsoft outlook calendar Because in john Deere we book the rooms for meetings using Outlook. I had implemented this functionality using C# in Unity tool, being neophyte in machine learning and artificial intelligence I tried to reuse existing libraries and solutions for computer vision and for locating the objects at runtime. After getting recognized for this Proof of Concept I got motivated to work in this field by dint of which I was able to file the Invention Disclosure based on Augmented Reality and Machine Learning which is submitted to United States IP committee of John Deere and is still in discussion phase. This filed Invention further mushroomed my interest in technologies like Machine Learning, Computer vision and Artificial Intelligence. Adding on, in last 4.5 years at John Deere I have created 20 software tools independently and got recognized by EUREKA Award which is one of the biggest competency awards in John Deere and have also received Highest performance rating every year from my stakeholders for releasing quality software applications.

I am intransigent in finding the unique and groundbreaking innovative solutions for the agricultural machines and to unravel the problems of farmers which will eventually facilitate them to feed the world’s increasing population. This is the impetus that empowered me to file at least one Invention Disclosure on yearly basis, in my carrier at John Deere I have filed 5 Invention Disclosure that have passed novelty checks by Patent Engineer and are under discussion. Being a part of Deere’s innovation program for last 4.5 years, I have observed that technology is about to take major leap forward in Off-Road vehicles and John Deere being a leader in Off-Road vehicles have already delivered innovative solutions like Autonomous Tractors which are solely based on Machine learning and Artificial Intelligence. As the technologies like [Artificial intelligence](https://www.inc.com/john-brandon/this-is-worst-use-of-artificial-intelligence-you-will-read-about-all-day-thank-you-so-much-google.html) and Machine learning are about to become much more intelligent, the demand of highly trained professionals will grow further to design and develop the software and products that can be trusted by the customers in quality and safety perspective. So, this is pivotal moment in time for me to pursue master’s in computer science. As from beginning I am differentiating myself in many ways, this course will unlock world of opportunities for me and will expose me to the cutting-edge technologies like Machine Learning, Artificial Intelligence and Cyber Security. I would like to work with companies like John Deere, google and Amazon in future.

Today, knowing my competencies and understanding where I want to accomplish, I yearn to study in “COLLEGE NAME” and pursue MS in Computer Science. Graduating from this Institute will part me the ability to pursue my educational goals in the manner most consistent with my future endeavors. It will be a pleasure learning from the professors who have excelled [as technology leader](https://www.powerthesaurus.org/as_a_technology_leader/synonyms)s in computer science and has won many venerable research grants. As the program offered by the Institute would furnish me with an opportunity to acquire advanced-level, high-quality training in the core areas of computer Science like Artificial Intelligence, Machine learning, cloud computing, Software Engineering and Security, I strongly believe that it will benefit me by helping me foster the skills that will be required to achieve my future goals.

Given my education, experience and passion of learning and innovating unprecedented things, I am a good fit for master’s in Computer Science in your prestigious Institute. I have researched the course and feel confident that the coursework and my work experience are a strong match.

Regards,

Navdeep Singh