

## **Statement of Purpose**

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### **Master of Engineering (Mechatronic Product Realization)**

As an inquisitive child, I was intrigued about the mechanism behind the working of machines; as an engineering graduate, I am still in awe of the incredible power and possibilities that lie within this challenging domain. The courses in Kinematics of Machines, Mechatronics and Automatic control during under graduation have only whetted my appetite for exploring the incredible spectrum of Machine learning and Artificial Intelligence. My career goals comprise imbibing the spirit of research and innovation to work at the forefront of technology, hence the decision to pursue a Masters in Mechatronic Product Realization from your prestigious University.

A strong numerical aptitude and a keen interest in STEM courses led me to opt for Science in high school. I secured a high 9.8 CGPA in Class X followed by 83.2% in class XII which I completed from Vidya Niketan School in 2015. I embarked on the journey to explore the world of machines with an undergraduate degree in Mechanical Engineering at the prestigious RCOEM College, Nagpur. While the first year laid a foundation of basic understanding of different engineering fields, the later years helped me unravel the mystery of mechanical systems. Learning about Strength of materials and Automatic control gave an insight into their working, developing mathematical models for various physical systems and how automatic control theory is applied to such systems. Kinematics of machinery exposed me to the different mechanisms used in different machines while Mechatronics enabled me to understand and appreciate the synergistic combination of mechanical engineering with other branches of engineering and analyze sensors, actuators and controllers of mechatronics systems. My final year project on the **Design of a Solar Thermal System for Industrial Process Heating** provided me with a platform for experiential learning. Using 'Polysun' software for simulation, we developed a miniature prototype with a complete solar thermal design system. As I was responsible for simulation and Temperature Datalogger for experimentation, I gained proficiency in Arduino to develop the same. A lower than expected grade in my GATE examination put my plans for masters on hold. However, seeing my dedication and interest, my father generously consented to support me financially for a Masters abroad. The next few months, I prepared and cleared my GRE and IELTS examinations and followed it up with an **internship at Integrity Robotics**. The past month has been a journey of hands-on learning in the industry, where I have worked on design and development of kinematic trainer of SCARA type based on MATLAB. I have also undertaken the Drop test of a tank using finite element analysis (Ansys LS -Dyna explicit solver) for simulating structure under a short period of intense load and am looking forward to honing my skills in bot work cell development & servicing. I also undertook online courses in Machine Learning and Python by Coursera as well as 'An Introduction to airplane performance' by NPTEL to prepare myself for the rigours of a Masters Program.

I sincerely believe that the future of technology lies in Automation as from home to factories; every aspect of human lives is being automated. Thus, I wish to explore Interactive Intelligence, Machine Learning and design systems using both mechanics and electronics. Decided on masters, I zeroed in on **Canada** and the **Simon Fraser University** after discussions with my professors and secondary research on the Internet. Canada is now an educational hub for international technical education owing to its emphasis on innovation, research and experiential learning at an affordable cost. In addition to being a developed country, Canada's invigorating culture and friendly people are something that every student looks forward to. Simon Fraser University is one of the foremost Canadian Universities offering cutting-edge technological studies in Mechatronics engineering. The depth and breadth of courses, coupled with a stimulating educational environment are an ideal mix for seminal and pioneering work in Mechatronics. The tutelage of world-class faculty and mission-focussed curriculum will provide me with the best academic experience. On a personal note, the course curriculum is a perfect balance of theoretical and practical aspects of manufacturing Systems, Finite Element Analysis, Advanced Modelling and Prototyping. Advanced knowledge about optimization techniques for engineering design and industrial robotics under eminent professors like Dr. \_\_\_\_\_ is very much in line with my academic aspirations. I am especially keen to undertake the Product realization projects and the Co-Op term to add a leading edge to my knowledge base. While my short-term career goals encompass working on intricacies of product design in premier technological companies, my long term-vision is to lead a product design team. Furthermore, I look forward to being a part of various extra-mural events and initiatives at the University. I have been an organizing member of various technical events like 'IMPULSE' at 'Pratishruti' 2018 and also represented RCOEM Nagpur in Regional finals of DRDO DRUSE Competition to design an unmanned ground vehicle (UGV). Working for the community is one of my goals, and I wish to contribute significantly at SFU, one of the Ashoka U Changemakers Campuses. Last but not the least, the university's strong industry network with leading Multinationals is testimony to its commitment to grooming students into industry-ready professionals, empowered to take on global challenges.

A Master of Engineering in Mechatronic Product Realization is thus a stepping-stone to deepen my knowledge base and drive innovation to script design advancements. A global perspective, cultural awareness and cutting-edge international education and will lay a solid foundation upon which I can build a meaningful career. This opportunity to gain an international education in an exploratory environment will open avenues for employment in Manufacturing, Systems design and Mechatronics. If given a chance, I am determined to make the SFU experience the cornerstone of my professional life. I am confident that an enduring educational pedagogy and a hunger for technological innovation at SFU will hone me as a person and a professional, empowering me to make a positive impact in the mechatronic world.