

Statement of Purpose

My name is **Harsh Goyal** and I am writing to apply for a **Master of Science in Autonomy Technologies to be taken at Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU)**. The knowledge gained during my education in the field of Mechanical Engineering and the practical experience that I have during my work in a company, specializing in smart metering solutions and product development made me appreciate technologies that may change the world. My first experience with engineering was based on mathematics, sciences, and integrating creative thinking towards a problem. I achieved a CGPA of 8.2 in my 10th Standard from the Central Board of Secondary Education. In my 12th standard I concentrated on major subjects such as Mathematics, Physics, and Chemistry achieving a high score of 87.40 percent.

During the 2018-2019 academic session, I completed my one-year extended classroom program for **JEE (Advanced) from FIITJEE**, one of the finest coaching institutes of India, for which I am recognized to be one of the eminent institutes for the Preparation of Engineering Entrance Examinations. I consider this intensive program very useful for enhancing my analytical skills and also for solving certain problems that will be a part of my engineering learning process. Then I was admitted to **Guru Gobind Singh Indraprastha University**. I completed my **Bachelor of Technology in Mechanical Engineering from Maharaja Agrasen Institute of Technology affiliated to GGSIPU** in the session of July 2023. I was a good student throughout high school and right until the undergraduate level having a CGPA of 9.05.

Bachelor Project: Of all the projects that I have been involved in my academic career, the bachelor project: Effect of Surface Texturing on the Tribological Properties of Journal Bearings carries lots of importance to me. A major project that I undertook during my bachelor's was **"Impact of Surface Coating on the tribological features of journal bearings"**. This project helped me to use theories that have been learned in class and develop a solution towards solving a practical problem; it also helped me to improve on my research ability and kindled my interest in developing ways of improving mechanical systems. Particularly, the present work has helped me to acquire the prerequisite skills of advanced-level academic studies through conducting extensive, comprehensive research and analysis.

Besides, as part of my learning process, I engaged in acquiring internships and joining workshops. I had practical exposure to the formulation of Standard Operating Procedures for capital goods manufacturing industries when I did a one-month training in the **Design Department at Victora Tool Engineers Pvt. Ltd.** It broadened my experience of real-life industrial practices about efficiency improvement and product development. Moreover, my experience in a fundraising internship at the Youth Empowerment Foundation showed my eligibility for SEO, PPC web development jobs, and my ability to change the field of work.

The position I am currently in at **Kimbal as a Mechanical Design Engineer** has helped me in ensuring my career goals are on the right track. The knowledge of work strategies that involve smart metering the electricity and hardware designing of the electricity meters have brought me closer to the rapidly advancing field of mechanical engineering that combines with artificial intelligence. The coordination of the projected costs, demand forecasting, and new product development control not only proved me to be a more technically skilled professional but also let me grow to become a sound project manager along with strategic thinking.

In the process of self-education, the issues related to language proficiency have been the most highlighted area. I studied English up to 16 years of education and have an overall score of 7 bands in the IELTS which is proof of my readiness to succeed in an English-speaking university. Also, I enrolled the German language with the A1 exam planned for February 26, 2024, at the Goethe Institut. It is this commitment to language learning that speaks to my desire to assimilate into the German academic and business communities.

However, the area of expertise of the technical skills I have developed entails the use of CAD CAM SolidWorks AutoCAD Ansys Fusion360 Blender 3D GoogleSketch Up, Web Development SQL and C++. Here are details of the skills as they relate to my interests in design, production technology, project management, HVAC, CFD, electric vehicle, automation, and data science; all of which well fit the Autonomy Technologies program.

Why this Course: The reason for enrolling in this master's program is grounded in my academic and working experiences. Of special note, the program is dedicated to subjects such as advanced control systems with the completion focused on Artificial Intelligence, which matches my interest in smart metering solutions that I have gained during my working experience at Kimbal. I am most looking forward to studying the specifics of machine learning algorithms and their use in implementing autonomous systems, further to the programming knowledge acquired while earning the bachelor's degree. Also, the focus on sensor fusion and computer vision in a curriculum will strengthen the knowledge of hardware design to develop more complex autonomous technologies for robotics. Personally, I have the opportunity to expand my teaming and intercultural interactions as a result of teamwork assignments with international students. This will not only help me qualify for the global work environments but also enhance my project management skills which are useful in my current job. The mechanical engineering focus of the program, coupled with the newest autonomy technologies makes it possible for me to connect the prior coursework to my future career in the rapidly growing field of autonomy.

Why Germany? In making a decision to enroll for my master's degree in Germany, there is the aspect of quality and innovation that Germany has for engineers. The assertion that Germany leads the revolutions in industry derives from the four characteristics of Industry 4.0. Given the strong focus on research and development of autonomous systems, it is a perfect place to advance one's education in this area. Particularly, I will mention the MS in Autonomy Technologies at FAU Erlangen as I have already mentioned that the program is very well-rounded and covers the practical aspects of engineering and connections between the traditional branches of engineering and novel technological advancements in the field of autonomous systems. Hence, it can be said that the focus of the program on creating an interdisciplinary learning experience suits my strengths and preferences properly.

Why FAU Erlangen? FAU Erlangen has therefore close relations with industries as well as highly equipped research facilities for academics and professionals. The university's policy for research developments and its partnerships with advanced technology firms give learners a raw deal in problem formulation on autonomy technologies. The aspect that I find most interesting about the job advertisements is the possibility of contributing to projects that would have immediate implications for the advancement of autonomy in various domains.

Future Goals: The opportunity to continue the MSc program and learn in the field of autonomous technologies will help me improve the fields in the future in such companies. Therefore, my objective is to work as **Autonomy Systems Engineer or Research Scientist** in renowned firms such as **Siemens, Bosch, and BMW**, to design future autonomous systems for industrial usage, smart cities, or progressive mobility.

Thus, the MSc in Autonomy Technologies at FAU Erlangen combines all the aspects of my previous academic experience, work, and vocational plans. Being an engineering student to a professional rendering smart-metering solution makes me ready and suitable for the challenges and prospects of this program. I am ready to dive directly into a stimulating academic atmosphere, work with people who have the same ideas and become the leaders who define the systems of tomorrow.

Thank you for your consideration.

Harsh Goyal