

STATEMENT OF PURPOSE

When I was 8 years old, a wise man once said to me, “You don’t choose your passions; your passions choose you”. At that time, it was tough to decipher the wisdom behind the phrase. However, as an 8th grader, I started to decode the essence of these words.

It was the time for my school science fair, which would be held in February. I decided to attend a science fair and explore science projects with absolute motivation from my mother. My curiosity for robotics and its underlying mechanics led me to win the best science project award in the next science fair for making a telegraph machine that can be used to talk using Morse code. The principal, all the faculties, and visitors congratulated me for making a project that was not only interesting but also involved critical thinking.

While my passion chose me, my thirst for discovering deep into this field wasn’t quenched yet. I began reading scientific journals, science and technology magazines and each time was fascinated with the latest innovations. I started building small projects at home and disassembled and reassembled kitchen appliances. Meanwhile, I came across an article that described a surgery conducted by a doctor from a remote location using a robotic arm. I was totally in awe of this technology and its potential applications in the industry. My interest in the field elevated with time. This realization drove me towards pursuing my undergraduate in mechatronics engineering at a top-ranked institute “XXXXXXXXXXXXX College of Engineering and Technology” in western India. Access to a wealth of literature, internships, research papers, and guidance from expert faculty sculpted a robust foundation. After my graduation, I have been working as a product engineer at Atreyo Research and Development LLP. Despite the steep learning curve, the quench for a prolific career hasn’t been fulfilled. By pursuing graduate studies in Robotics, I intend to acquire expertise, thereby, bridging the knowledge gap with my inquisitiveness in Control of robotics, Cognition, and Artificial intelligence. The coursework at G. H. Patel institute walked me through the length and breadth of automation and robotics, with subjects focused on Design, Control, and Automation aspects. I attained an instant liking to control systems and designing mechanisms. Also, Simulating control systems via programming caught my fancy. The academic program also provided me with a collaborative integration of engineering fundamentals with theory and practical work and also an opportunity to witness the same in nation-wide popular industries like KHS Machinery and Amul Chocolate Factory.

I was the lead in my final year project entitled “*DESIGN AND DEVELOPMENT OF BIO-MORPHIC HYPER-REDUNDANT SNAKE ROBOT*” where my team and I designed the mechanical parts of the snake robot using 3D designing software, designed its control and power circuit as well as programmed its gait motions. We made a working prototype of the snake robot, which was highly appreciated by the Dean and faculty. The entire project was sponsored under the state government-funded “Student Start-up Innovation Policy” (SSIP). This project led us to publish a research paper on “A Novel Concept of Bio-morphic Hyper-Redundant Snake Robot – An Approach for Search and Rescue Operations” in “International Journal of Disaster Response and Emergency Management”. This research describes an inordinate utilization of a snake robot in any disastrous situations like earthquakes, landslides, Tsunamis, etc.

Effective learning is what gets supplemented by practical exposure. My internship in a reputed pharma company “Intas Pharmaceuticals Pvt. Ltd.” allowed me to explore German-made automatic manufacturing and packaging for the production and packaging of medicine tablets at a high production rate. I came to know about the manufacturing processes of different types of medicine tablets which are intended to remain untouched throughout the process until packed. I also explored a high-quality, fully automatic, and high-speed inspection machine of Japan made which ensures the quality of



outgoing medicine tablets. Working with one senior person, I managed to calibrate the inspection machine and increased its speed by 6%.

Besides the classroom lessons, my technical aptitude was polished through an 8-week online course on Robotics from IIT Madras and a 12-week online course on Deep Learning from IIT Kharagpur. I learned about the techniques to implement deep learning models and how changing its parameters will affect the learning curve. Also, I learned about different configurations, kinematics, and dynamics of a robot in the robotics course. I got an opportunity to volunteer as a math tutor at a local NGO named “Bachhpan” which worked towards eradicating child labor and providing education to the less fortunate, thereby, paving the path for their future. I also volunteered in the Research and Development Department of Prarambh GCET club. These experiences allowed me to work in a diverse environment, by not only adding values of teamwork, coordination, tolerance, and leadership skills but also holistically impacted my personal growth.

My job placement in Atreyo Research and Development LLP as a Product engineer allowed me to work closely with IOT based products. Working for the past one and a half years, I learned the planning, coordination, development, testing, and supervision of technical aspects of building a product. These allowed me to successfully provide my insights into hardware design and troubleshooting, prototyping, cost estimation, feasibility checking, IOT software design and testing. While I have a strong foundation, I want to be a paradigm shifter with the necessary advanced education, innovative perspective, and technical expertise in the field of Robotics.

This brings me to the realization that my undergraduate education is just a glimpse of this field awaiting endless exploration possibilities. To acquire in-depth competence alongside refining my intellectual skills, M.S. in Robotics and Autonomous Systems will serve as a stepping stone. The underlying challenges of the field and its potential applications never fail to intrigue me. Obtaining a Master's degree will provide me with a solid foundation for a good research career.

Being near to Silicon Valley, Arizona State University would be the right choice to kick off my career with some excellent companies participating in the career fairs. The university's research-driven academic curriculum highly captivates me and lies within my interests. I strongly believe that graduate study within your Robotics department would strengthen my expertise in Robotics science and reinforce interdisciplinary skills. Moreover, I am in absolute awe of Dr. Dimitri Bertsekas' excellent research work on Reinforcement Learning and Artificial Intelligence which eminently contains my area of interest. I am confident that, given the opportunity, I will make significant contributions to the ongoing research work at your department. I am convinced that my study at your university would be a meaningful and rewarding experience. I look forward to having a long and profitable association with your esteemed university.

Thank you for the kind opportunity you have given me to express myself.

Sincerely,

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