In the years of my undergrad, I have paved the path for my passion in the domain through structured learnings and professional experiences. Enthused with the mere thought of an opportunity to convert my lessons to live projects, I undertook multiple internships. Utilizing the summers of 2019, I worked as a trainee at Oil and Natural Gas Corporation (ONGC), New Delhi, India. The project majorly dealt with the drainage problem that ONGC plant in Tripura, India was facing. In this project, we analyzed the system's hydraulic grade line (HGL) to determine if the drainage system could accommodate design flows. We designed three different drainage plans and compared their performance according to peak discharge, average velocity and flow type. The exposure and extensive learning opportunities at this avenue carved my roughened edges and polished my skills. Marching ahead with the acquired acumen, I devoted the year 2020 to gaining commendable scholastic insights. Working under the mentorship of Dr. Ashutosh Trivedi, Dean of IRD (Industrial Research and Development), DTU on a project titled, "Vibration Transfer to the retaining walls due to traffic movement" involved me to the scientific aspects of the field as I developed an urge to apply my technical expertise in the real world. In this project, we studied the effects of traffic movements on the retaining wall. We were able to draw comparisons of the effects of traffic movements on the retaining walls based on the road conditions. As this project of ours is ongoing and hasn't been completed yet, the conclusion of the project is yet to be drawn. This was the first instance of recognition in my life, where an epiphany of my inclination towards being a creator met me.

All the time I invested in learning and gaining from engineering, I was fascinated by the efficiency of the Civil Engineering that had connected the entire world. In my undergraduate project, I had worked on "Damage Detection and Vulnerability Analysis of Structures using Deep Learning" under the supervision of Dr. Ashutosh Trivedi. As the first part of the project, we experimented on how deep learning can be used to detect road and surface cracks. We built the models, explored various preprocessing techniques and tried different architectures. We were able to get performance comparable to the SOTA models. The work that we did was later accepted and presented at ICISS 2020, an IEEE conference. After exploring the problem statement thoroughly, we realized the need of a dataset for building a model that can properly assess vulnerability of the road cracks. The dataset preparation is almost completed and is labeled according to the vulnerability. We have tried various architectures on the dataset that we have prepared and the results are promising. To hone my skills and add profound features to my profile, I worked on other multiple research projects. I have worked with Dr. Ritu Raj of the Department of Civil Engineering.Under his guidance, I have also done a review paper on urban planning titled "A Review of AI for Urban Planning: Towards Building Sustainable Smart Cities" in which the use cases of AI and IoT for smart cities are explained in great detail. The paper was accepted in ICICT 2021 which is an IEEE conference to be held in January. I have enjoyed working on projects, drafting the manuscript, addressing the reviewers' comments and getting the work accepted and making the work accessible to a lot of people. This makes me feel that getting a graduate degree will let me do a lot of research and thus I want to go into academia.I have worked hard on other topics as well. For example, we did a detailed analysis of the factors affecting compressive strength of concrete using machine learning techniques. With various regression models, we were able to find out the features that are most important when it comes to compressive strength of concrete. The paper was accepted and presented at IEEE ACCTHPA 2020.Similarly, I have continuously worked on various review papers to develop my skills of thoroughly reviewing the literature and drafting the manuscript properly. I have written multiple review papers which are published in reputed IEEE and Springer conferences.

After all these exposures, today, I locate myself at a juncture where I feel the strong need to apply for a M.Tech. in the most demanding, recognized, and continuously advancing domain. IITKGP carries its prestige as a respected university with an affinity towards cultivating innovative thinkers and unique researchers. Being cognizant of the fundamentals and professional experiences of Civil Engineering, I am now driven to invest my time in discovering the deepest mysteries of the domain. My association will meet my aim to contribute better innovations to society and prepare for the robust industry with a revered institute like yours. Exposure to the top facilities and industry experts at your prestigious institution is the right place for me to build my next step.I firmly believe that learning under the tutelage of highly recommended and reckoned faculties and practitioners, outstanding academic and mixed cultural environment,customized curriculum, well-equipped lab, and opportunities will allow me to fulfill my visions in the best possible way.