When I began my undergraduate journey four years ago, I initially chose to major in Marine Science. However, during my freshman year, I took an elective course Artificial Intelligence and Big Data, which profoundly reshaped my career aspirations. For an assignment in the course, I combined my Marine Science background with machine learning methods to predict sea level trends for the next century. During the project, I was deeply impressed by how powerful the algorithms and models running on computers can be in solving real-world problems with immense amount of data and cross-domain knowledge. Since then, my interest in computer science has grown significantly. Finally, I decided to switch my major to Computer Science in my sophomore year, even though it meant an extra year for finishing my program study. I realized that “dealing with the real problems with the right tools” is what I want, and I firmly believe that AI is the key to it.

The two years during my transition to the new major coincided with rapid evolution in Artificial Intelligence. I witnessed how AI, especially the large pre-trained models, swiftly developed from academic research to industrial applications, impacting sectors such as healthcare, education, finance, and the natural sciences. This progression was exhilarating, and it reinforced my belief that AI has its potentials to drive revolutions across various disciplines. This motivated me to delve deeper into these emerging technologies, aiming to contribute to interdisciplinary research, particularly AI for science.

With a clear sense of direction, I prepared myself thoroughly, and actively looked for opportunities to apply my knowledge of computer science and data science in various fields. Academically, I built a solid foundation in advanced mathematics and programming. My performance in Advanced Mathematics was ranked third among 150 peers, and I achieved the top rank in the Machine Learning course. Beyond my regular coursework, I took the initiative to form a multidisciplinary team and led our participation in the 2024 Mathematical Contest in Modeling. Our team consists of members from backgrounds of computer science, finance, and mathematics. As the team leader, my responsibilities included not just coding the implementation of our model, but also coordinating communication across different disciplines within the team and managing the progress. In the contest, our team are required to assess disaster risks for insurance industry. We developed a model named HEV to comprehensively model the risk according to regional risk, development level, and resilience. Additionally, we proposed another model combining the entropy weight method and TOPSIS to determine building protection levels. Finally, we successfully applied our model to the protection of the Confucius Temple in Hainan Province, China. Our solution ranked in the top 2% globally and earned us a Finalist award.

To deepen my understanding of the intricacies of real research problems as well as gain hands-on experiences, I joined the Intelligent Perception Lab in our school during my sophomore summer break. Guided by professors and senior students in the lab, I contributed to a project focused on the semantic segmentation of lung nodules. My role involved implementing and deploying the U-Net network as the backbone of our project solution. I also enjoy exploring opportunities of enhancing existing network architectures. For instance, in a facial recognition task on a small-scale dataset, I modified ResNet-18 by incorporating ResNeXt blocks and adding dropout layers. The improvements, along with data preprocessing and fine-tuning, resulted in a model that significantly outperformed the baseline by nearly 50%.

With all these interdisciplinary experiences, I am particularly drawn to the Hong Kong University of Science and Technology (Guangzhou) for my future studies. As a leading research institution, HKUST has emphasized interdisciplinary development and academic integration, making it my top choice. Particularly, the Red Bird Challenge Camp adopts a broad-based training approach to cultivate interdisciplinary research talents. Building on my undergraduate background, I plan to leverage AI to advance marine science research, such as improving coastal ocean modeling and ocean current prediction. I am eager to participate in the Red Bird Challenge Camp, which I believe will further hone my interdisciplinary skills and enable me to contribute meaningfully to AI research in marine science.

The HKUST (GZ) program matches perfectly with my academic background and career goals. I am excited about the opportunity to engage in cutting-edge research and interdisciplinary collaboration. I look forward to the possibility of being a part of the HKUST family and contributing to the vibrant academic community.