

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 and the experience profoundly reshaped my career aspirations. For an assignment in this course, I attempted to integrate knowledge from different fields. Utilizing my background in Marine Science, I employed time-series-based machine learning methods to predict the trends of rising sea level for the next century. This project revealed to me the power of computer science in solving real-world problems through data and interdisciplinary knowledge, and I realized that this is the path I wanted to pursue. Since then, my interest in computer science grew exponentially, leading me to switch my major to Computer Science and Technology in my sophomore year, even though it meant extending my studies by an additional year.

The two years of my transition to the new major coincided with the rapid advancements in Artificial Intelligence, marked by the advent of large language models and their application. I witnessed firsthand how AI swiftly transitioned from academic research to industrial applications, impacting sectors such as healthcare, education, finance, and the natural sciences. This progression was exhilarating and reinforced my belief that computer science and AI can drive advancements across various disciplines. It motivated me to delve deeper into these cutting-edge technologies with the aim of contributing to interdisciplinary research, especially AI for science.

With a clear sense of direction, I prepared myself thoroughly and actively sought opportunities to apply my knowledge of computer science and mathematics across various domains. Academically, I built a strong 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 comprised members from the Computer Science, Finance, and Mathematics Departments. My responsibilities extended beyond coding to coordinating cross-disciplinary and cross-functional communication as well as project management. In the contest, our team developed a model named HEV, which comprehensively modeled regional disaster risks based on factors like regional risk, development level, and resilience. Additionally, we proposed a model based on 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 a Finalist award.

To gain hands-on research experience and understand the intricacies of scientific inquiry, I proactively joined the Intelligent Perception Lab at Sun Yat-sen University during my sophomore summer break. Under the guidance of professors and senior students, I contributed to a project focused on the semantic segmentation of lung nodules using UNet. My role involved implementing and deploying the UNet network. I also explored enhancing existing network architectures. For a small dataset facial recognition task, I modified ResNet-18 by incorporating ResNeXt blocks and adding dropout layers. These 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 (GZ) has emphasized interdisciplinary development and academic integration, making it my top choice. The Red Bird Challenge Camp, in particular, adopts a broad-based training approach aimed at cultivating interdisciplinary research talents. Building on my undergraduate background, I plan to leverage Artificial Intelligence to advance research in marine science. For instance, AI can be employed to improve coastal ocean modeling. Therefore, 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 the field of AI for marine science.

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