

Born and raised on the Roof of the World, the Tibetan Plateau, the spirit of adventure runs in my blood. Besides expeditions to the high peaks of the Himalayas, intellectual explorations have also been an indispensable part of my life. Science's unsolved questions have long fascinated me, far more than the close-ended questions I encountered in my coursework.

In previous research endeavors, I have explored latency reduction in information-centric networking, data collection using vehicular ad-hoc networks, and the use of Graph Neural Networks (GNNs) in traffic accident prediction. My research participation has enhanced my skills in data mining, computational modeling, and deep learning. From finding research topics to publishing papers, I have demonstrated a profound affinity for academic research.

My first experience with scientific research was as an undergraduate research assistant. I studied the mechanism of information-centric networking and devised two algorithms to improve the routing and placement of data packets. This work could improve network performance in terms of delay, cache hits, and network traffic. The second project I worked on involved simulating the process of data collection using taxis. Based on an analysis of the real-world trajectory of cabs, my supervisor and I then proposed three schemes to improve the deployment of data centers to increase the efficiency of data collection. This research proved the feasibility of utilizing taxis to collect useful data that, if applied in practice, has the potential to facilitate the maintenance of infrastructure.

Upon completion of my bachelor's degree, I studied abroad at NUS, where I had the privilege to work with Professor Bryan Hooi on graph representation learning. In my master's degree thesis, I built four graph-based traffic accident datasets using real-world geospatial data. Professor Hooi and I also proposed a novel GNN framework to capture angular and directional information from road networks. I then evaluated ten state-of-the-art machine learning approaches using the created datasets. We demonstrated that the proposed framework consistently outperforms the baselines. Following that, I built and released a new set of traffic accident benchmark datasets for one thousand US cities, added four GNN baselines, and tested fourteen models on all of the released datasets. This work was presented as a contributed talk at The ACM Web Conference Workshop on Graph Learning Benchmarks.

I am especially interested in developing new GNN frameworks, constructing graph structures, and applying GNNs in various interdisciplinary fields. During my GNN project, I also realized that models cannot be fully trusted without reasoning the underlying mechanisms behind the predictions. Therefore, it is my hope to continue working on these research topics under the supervision of Professor Hooi.

Being a first-generation college student, I am highly grateful for all the teachers and mentors who have helped me along the way. My rural background has not stymied but instead only deepened my aspiration for knowledge. Deciding to pursue a Ph.D. is a bold choice, yet bold decisions are what have brought me this far. Hence, I strongly aspire to join NUS so that I can embark upon one of the most challenging paths. My practical research experience and clear academic goals are well-suited to this program, and I am confident that my adventurous mountaineer's spirit will complement the strengths that my fellow students will bring to NUS.