**Master of Science - Electrical and Computer Engineering**

**Carnegie Mellon University**

**Statement of Purpose**

My passion for self-driving vehicles propels me to step into the field of deep learning and artificial intelligence. Based on my thirst for knowledge and inquisitive nature, I strive to keep myself abreast of technology trends and take the initiative to obtain hands-on experience related to these techniques, especially regarding computer vision and natural language processing. I am applying to the Master of Science program at Carnegie Mellon University because it provides me with an environment to develop real-world applications and solve social issues with a group of outstanding members.

Back in junior high school, I was inspired to become an outstanding scientist and entrepreneur after reading the biography of Steve Jobs. At National Taiwan University, I met Professor Yu-Chiang Frank Wang, my advisor for junior year, and was inspired to delve deep into deep learning and computer vision. In addition to participating in various projects, I have taken diverse courses. In the Deep Learning for Computer Vision course, I witnessed various advanced computer vision applications, such as image generation and object detection. I was so fascinated by these applications since the approaches can effectively solve many real-world problems.

To pave the way for the future, I actively seize all the opportunities to earn research experience during my undergraduate studies. At National Taiwan University, I designed a disentanglement representation framework for domain generalized face anti-spoofing. The work was awarded first place in the Deep Learning for Computer Vision Final Project and submitted to the Association for the Advancement of Artificial Intelligence for publication after further refinement. Moreover, I have gained industry experience by joining a project sponsored by the Cathay United Bank. Aside from working with the team to develop the Smart Face Recognition Access Control, I also improved the recognition rate from 98% to 100% successfully. To overcome the barriers posed by the COVID-19 pandemic, we also researched Masked Face Recognition and effectively achieved state-of-the-art performance, which research outcome was published by the International Conference on Consumer Electronics. In addition, I actively participated in the research of question answering. My efforts paid off when my team reproduced a state-of-the-art model in the QA dataset. These invaluable research experiences have not only expanded my scope of knowledge but also equipped me with the ability to work independently and collaboratively.

The lessons I learned from the projects are not only professional knowledge but also positive attitudes to face stress and frustration. Since my senior year, I have been working as a Research Assistant for the industry-academia cooperation project on Fisheye Face Recognition. At first, my unfamiliarity with how to identify and resolve the core problems has often resulted in harsh criticism from my supervisor. I was overwhelmed by stress and was afraid to take part in meetings. However, I soon realized that dodging problems would put me several steps behind my goals; therefore, I actively consulted the experience of senior peers and solicited guidance from the supervisor to address the issues that I encountered. Gradually, I turned the challenge into an opportunity for self-learning and advancement. Since then, I have pinpointed potential problems accurately and leveraged systematic and efficient approaches to tackling them.

I was even recommended by my supervisor to deliver a speech about my research experience to undergraduates, which is an obvious recognition of my progress. This experience has fostered my forward-looking mindset and armed me with the ability to turn stumbling stones into building blocks whenever I came across obstacles. Throughout my academic journey, I took part in many course projects that relied on team efforts to construct the website, perform the decentralized blockchains, and so forth. In the process, I became adept at communicating effectively with team members, converting my ideas into action, and listening carefully to the opinions of others.

Despite my background in electrical engineering, I have actively participated in a variety of marketing planning and business proposal contests to enrich my studies. As a leader and a team player, I excelled in mobilizing teamwork to yield fruitful outcomes. From freshman year to junior year, I had been the leader of the dance team of our department. Aside from leading more than a dozen students to deliver a performance in front of hundreds of audience, I also gained vital skills such as assigning tasks, allocating resources, maintaining open communication, developing team cohesion, and settling disputes.

I pay close attention to social issues and strive to stay on top of global development. Hence, I hope to pursue a field that enables me to address the most urgent needs of our society. According to my observation, the "road rage" phenomenon is prevalent in many countries, including Taiwan. Often, drivers refuse to give in to each other and resort to irrational quarrels since they treat each other as objects instead of subjects. I believe that more connections can be established between the drivers and the automobiles to create a friendlier and safer road environment. By integrating the existing self-driving system and AI-backed voice-activated robot technology, I seek to make driving more humanized to alleviate the problem of road rage. During my graduate studies, I look forward to delving into artificial intelligence to gain professional expertise and prepare myself for working in a related industry after graduation, such as Argo AI, Waymo, Tesla, etc. I hope to assume positions in the Research and Development department to develop humanization vehicle systems in the future, which will create a safer and more convenient traffic environment.

CMU's diversified courses will give me an in-depth understanding of deep learning and artificial intelligence, cultivating my competitive edge when entering the workforce. Attending your program will most certainly be a rewarding experience.