

I aspire to pursue a PhD degree in the area of Wireless Communication and Networking. My long-term goal is to become a researcher in the laboratory of a high-tech company with an aspiration to completely reform the way we connect with the world. I believe I can reach this goal with graduate training in the ECE department of UCDavis.

As a research assistant, I have co-authored several papers in top journals/conferences, including *IEEE Transactions on Multimedia*, *IEEE Access*, *IEEE GLOBECOM*, *IEEE ICC* and *IEEE VTC*. My motivation for wireless research comes from a major life event. I had undergone lung surgery in my junior year. During my hospitalization, whenever my mobile phone ran out of battery, I had a hard time untangling the charging cords due to the drainage tube on my chest. This sparked my interest in developing more convenient wireless technologies.

To delve deeper into wireless research, I joined Prof. Hung-Yu Wei's Wireless Mobile Network Lab. My first research project focused on cache-enabled adaptive video streaming. Through studying the literature, I found the social impact of online users has huge potentials to enhance the hit ratio of video cache, thus enhancing Quality of Experience (QoE). I also found that due to different playback request patterns and downlink capacity of mobile users, videos can be partially cached and be transcoded in real-time to improve resource utilization and adapt to the fast-changing channel condition. By integrating the above findings, I designed a social-aware and QoE-driven video cache framework to improve existing video streaming schemes. Combining my proficiency in programming, I further conduct a series of experiments based on real-world data to validate my proposed framework.

My second study aims to address the task offloading problem in UAV-assisted vehicular networks, which is NP-hard in general. I found that current algorithms often take a long time to obtain a decent solution and thus fail to fulfill the latency requirements of emerging vehicular services regarding their high mobility. By taking advantage of both Deep Neural Network (DNN) and Particle Swarm Optimization (PSO), I developed a hybrid learning framework that can jointly optimize UAV positions, computation offloading decision and spectrum resource allocation in Radio Access Network (RAN) with low-complexity while dynamically tuning the DNN in order to adapt to the time-varying wireless environment.

After completing the above challenging topics, I turned to collaborate on a survey paper with the topic of service orchestration and resource management for edge computing. After surveying over 350 papers from various aspects, I have identified the limitations of existing techniques and outlined potential research directions. Meanwhile, as Network Function Virtualization (NFV) and Software-Defined Network (SDN) become a promising paradigm for 5G core networks, I also collaborated with Prof. Chun-Ting Chou on the mathematical model design of virtual network embedding system and reliable QoS flow routing. These experiences have laid the rigor foundation for my research methodology and provided me with profound insights into research.

Highly attracted by the research of your esteemed faculties, I would like to apply for your prestigious PhD program. Specifically, **Prof. Chen-Nee Chuah**'s studies on online social networks, mobile computing and SDN match my research interest perfectly. **Prof. Zhi Ding**'s expertise on the MIMO system and digital wireless network design unveils the essence of wireless technologies that I'm pursuing. I also found **Prof. S.J. Ben Yoo**'s research on optical networks and high-performance routing appealing as it serves as a promising solution to realize future wireless networks. I believe working with them can equip me with the latest knowledge required to achieve my aspiration. I also believe that both my strong academic ability and research passion will make me a suitable candidate for admission.