

Personal Statement

Chih-ho Hsu

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. I believe I can reach this goal with graduate training in the EE department of Columbia University.

As a research assistant, I have completed 3 research projects and 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 have 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 independent research focused on cache-enabled adaptive video streaming. By embedding the social impact of mobile users into the video caching mechanism, I designed a social-aware QoE-driven video caching framework to improve existing video streaming schemes. Through studying the related literature and seeking solutions to academic problems during this work, I'm more convinced that wireless research is my life's ambition.

My second study aimed to address the UAV-assisted task offloading in vehicular networks. 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 and spectrum allocation in Radio Access Network (RAN) with low-complexity while dynamically tuning the DNN to adapt to the time-varying wireless environment. From this series of research, I have established solid expertise in the research of deep learning with an application to wireless networks.

As an undergraduate member in the collaborative project "**B5G smart cross-layer multi-access edge computing**", I have worked on a survey paper on the topic of service orchestration and resource management for edge computing. After analyzing over 350 related papers from various aspects, I have identified the limitations of existing techniques, outlined potential research directions, and contributed 3 sections to the paper. This experience has 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 *Electrical Engineering MS/PhD program*. Specifically, **Prof. Gil Zussman's** research in wireless medium access control and resilient communication matches my research interest

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perfectly. **Prof. Javad Ghaderi**'s expertise in stochastic optimization and wireless scheduling algorithm unveil the essence of wireless technologies that I'm pursuing. I also found **Prof. Xiaodong Wang**'s recent studies on channel estimation for massive MIMO systems 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.