Research Plan

During the summer vacation before my fourth academic year, I did some research about secret sharing. In addition to Shamir's Secret Sharing, I also learned Blakley's Secret Sharing, Counting-based Secret Sharing, and Matrix-based Secret Sharing. Lots of media channels have been applied to hide information, such as picture (Visual Secret Sharing) or audio (Audio Secret Sharing). I feel interested in this field and want to dig more to explore its potential on the Internet.

I received a grant from National Chi Nan University to study *Secret Sharing with Multi-cover Steganographic Audio Files*. In this research, I explored the Secret Sharing and Steganography. In literature survey, I noticed a paper about steganography with LSB in picture. It claims that hiding data in LSB of an image file is really fragile. Normally, the pixels in a picture would be similar to its nearby pixels, the LSB of the pixel would similar to its nearby LSB, too. Meanwhile, after it is replaced by hidden data, the bit value of LSB will become random, so a simple statistical method like Chi-Square Test can easily detect that some data are hidden in the image file. However, is that true for every picture? If a picture was mixed with noise or compressed, would the claim still be true? If we consider another media like the sound, does this problem also exist? I'm so excited about it and want to explore more on steganography and its application in network security.

Meanwhile, I'm curious about information security. I am taking a class called "Secure Coding in C and C++" this semester. I've learned a lot of knowledge, such as the problem caused by Buffer Overflow. I would also learn about information security in my remaining time in this academic year, and plan to devote myself to the study of information security.

Study Plan