

Exploring Wireless Networking Techniques Using Android Devices

Summer & Fall 2010

National Science Foundation Research Experience for Undergraduates (NSF REU)



In the summer and fall of 2010, I studied wireless networking techniques for Android OS devices as part of the National Science Foundation Research Experience for Undergraduates Program. I worked under the guidance of Texas Tech University Computer Science Professor Sunho Lim. Under Dr. Lim's direction, I explored the wide spectrum of capabilities provided by the open-source Android SDK. Starting with the basics of Android development, I applied basic Java networking techniques such as socket programming to android devices and applications with a great deal of success. I finished the project by looking into the possibility of applying Peer-to-Peer networking techniques to Android devices, and possible mobile applications of such techniques.

Throughout the course of the project, I learned a great deal about not only Android OS and mobile application development, but also about the research process. It was both exciting, and frightening to see the availability of resources, such as web pages, books, and online message boards dwindle away as I gradually moved away from what had been done before and into unexplored territory. Above all, I feel that the most important virtue in undertaking a project such as this is patience. There is a great deal of "trial and error" involved in the process of taking widely used programming practices and applying them in a new, untested environment. I spent countless hours at the computer testing a multitude of techniques for sending the string "Hello" wirelessly from one Android device to another.

All in all, I felt that the research experience I gained from my participation in the NSF REU program was invaluable. The program has inspired me to pursue research projects in other areas of research as well as advanced degrees. While occasionally frustrating, I enjoyed the research process considerably and my faculty advisor, Dr. Lim was extremely helpful and supportive and I would like to continue working on projects with him even after I complete this program. I would strongly recommend that all undergraduate students, especially those pursuing degrees in science and engineering should participate in research projects of their own under the guidance of a faculty advisor either through the NSF REU or other undergraduate research programs.

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