Faculty Name: Dr. Reza Sedaghat

Project Title: Telecommunication systems: GSM Protocol Analyzer

Description of Project (Provide ½ page project description)

GSM, the worldwide leader in telecommunication systems is the prime focus of this Research Project. Understanding how software integrated devices calibrate and coordinate different types of information being transmitted over air is the center of the research. This will involve detecting and differentiating packets of information as well as understanding how the GSM network manages different cell phones using the 3G and 4G networks. Detection and demodulation of live signals is the most important aspect of the project, requiring the use of multiple resources. Experience will be gained by coding in C/C++ and understanding open source written software to analyze the network. Valuable research experience will also be gained by learning how radio links are established while implementing basic and advanced knowledge of networking.

Responsibility of Student (Specify the duties and responsibilities of the student)

1) Understand how two cellphones create a radio link using GSM network
2) Develop a working knowledge of synchronization and coordination between a mobile base and a radio station
3) Recognize the different types of data/information being transmitted
4) Test understanding using software and mock up GSM technologies
5) Develop and generate a device which detects and differentiates cellular phones and their radio links
6) Develop the ability to understand and modify the network aspects of a radio link

Specify Requirements (Please state any specific requirement of this position)

The Research Assistant must have a specific interest in implementation of hardware based code and in developing an embedded system, which is able to detect and analyze RF signals. He/She must be knowledgeable from courses such as COE 328,428,538,608 and ELE 404,504,532,635. Understanding and analyzing algorithms is a key advantage.