Assignment for COMP4336/9336 Mobile Data Networking
Semester 2, 2016 (Individual Assignment)

Due: 11:59pm Friday 21 October

Weighting: 25%

Preliminary Version 100816 – Released on 10 August 2016

NOTE: This is a preliminary version released in Week 3 to help students understand the nature of the assignment. Some details, such as the submission procedure, assessment guideline, etc., as well as some other technical details will be included in the final version to be released in Week 5. All assignment related matters should be discussed using the Discussion Forum on the Moodle account of this course.

Title: Device-to-device Communication over Audio

Background and Motivation

Most mobile devices include a speaker and a microphone. This creates an opportunity to enable device-to-device (D2D) communication over audio that would work for almost 100% of the available devices in the market. Audio-based D2D would also enable any other devices with a speaker, such as a TV, FM radio, musical instruments, alarm systems, and so on to communicate directly with a personal mobile device without having to configure WiFi or Bluetooth connections. Audio-based D2D can also provide a more efficient and ubiquitous alternative to NFC-based communication used for a growing volume of mobile payment transactions and other emerging services. Tech giants have already started exploring the potentials of audio-based D2D giving rise to new developments such as Google Tone, an extension of Chrome that lets nearby devices to share URLs over inaudible sound frequencies.

Assignment Task

In this assignment, students will design, implement, and test audio-based D2D communication for personal mobile devices. Students are allowed to use any Android or iOS devices of their choice.

Learning objectives

Upon completing this assignment, students will:

1. Gain insight to audio-based data communication applicable to current mobile devices,
2. Master the access to speaker and microphone in mobile devices, and
3. Learn how to design and implement a basic audio-based data transmitter and receiver for personal mobile devices