CSE 5345

Projects – Spring 2017

Project 1

File Transfer between two devices using an intermediate smartphone as relay.

Two devices (tablet or smart-phone), which cannot communicate directly due to distance will use a 3rd device in between them to communicate. Using the relay, one device should be able to send/request music or video from another device.

Requirements:

a. The file transfer has to be in real time using Bluetooth or Wi-Fi Direct.
b. Assume that the 3 devices are in fixed positions.
c. As a start point you can transfer a large text file. The user receiving the file should see the text in his app interface.
d. Extend it to do music and video file transfer.
e. Programming Framework: Android (recommended) / iOS

*Data transfer will start with user intervention in the transmitter and receiver side. However the transmission through the relay phone should be seamless, not needing any intervention of the users.

Project 2.

Wireless P2P File Sharing

Implement a wireless Peer-to-Peer network for file sharing where a central device acts as a tracker server. The tracker server keeps track of the connected peers in the network and the files available with each peer for sharing. An interested peer fetches the list of files and the respective nodes from the tracker and uses this information to directly download the file from the peer.

Requirements:

a. The tracker server must maintain the list of peers in real-time. The list of peers must be updated whenever a peer joins or leaves the network. The same should be updated on the peer devices.

b. A peer may leave the network abruptly while another peer is downloading from it. The application should either pause or cancel the download gracefully.

c. A peer should be also be able to notify the tracker if it has any files available for sharing which should then be reflected to every connected peer in the network.

d. The file list and the peer list should be visible on the peer device. The user should select the file from the list after which the download can begin. Appropriate download progress must be shown in the UI.

e. Programming framework: Android/iOS

* Extra credit: If the same file is available with multiple peers, the app should download different chunks from each peer simultaneously and merge the chunks in the end to build a complete file.

*You can use either Bluetooth or Wi-Fi for the file transfer, though Wi-Fi would be preferable due to its high speed characteristics.

Project 3

Interfacing a wireless device with a computer

Implement an application that interacts with a computer wirelessly. Either the mobile or the computer can initiate a connection to the other device.

Requirements:

a. The user should be able to initiate the connection from the mobile device or the computer.

b. If the mobile device initiates the connection, a list of files on the computer should be displayed on the mobile device and vice versa.

c. The user should be able to view, download and upload files from the mobile device to the computer and vice versa.

d. Progress should be shown on the either end of the download.

e. Language/ Framework: Android for the mobile application and Python/Java for the desktop interface. Interfacing on the computer can be done via application or a web-browser.

*You can use either Bluetooth or Wi-Fi for the inerface