GPS Location Sharing over Bluetooth for Mobile Devices
Kyle Gong

**Background:** Although many mobile devices, including the latest BlackBerry and iPhone models, now include built-in GPS capabilities, the majority of mobile devices still do not have built-in GPS capabilities. However, the functionality of devices lacking GPS capabilities can be extended through location information shared by nearby GPS-enabled devices wirelessly via Bluetooth.

**Main Objective:** Extend availability and access to GPS location information to devices lacking built-in GPS receivers and to devices in areas where GPS coverage is not available.

**Method:**
- **GPS Sharing between Peers**
  - GPS-enabled devices can share their locations with nearby devices using Bluetooth
  - If two devices are within Bluetooth range of each other, their locations are approximately the same (within range of 10m for Class 2 Bluetooth devices)
  - Multiple signals and corresponding power levels can be used to calculate a more precise fix on the device’s location
- **Bluetooth Location Beacons**
  - Bluetooth-enabled beacons placed in fixed positions can transmit their known location to nearby devices
  - Can deployed inside an interior environment to extend GPS coverage to areas otherwise unreachable by satellite coverage
- **Location Share Protocol**
  - Establishes an interoperable protocol for sharing location information over Bluetooth that can be implemented by any Bluetooth compatible device
- **Multiple Security Levels**
  - Anonymous
    - Location can be broadcast without revealing any identifying details to preserve privacy
  - Trusted
    - Authentication information can also be shared and verified through a remote server