Project title: Sociometric Badge replacement App for cellphone

Brief Description of Design Project Goals:

Overview:
A researcher in Design and Environmental Analysis at Cornell is currently using custom devices to measure individual interactions between people working in groups. The devices are relatively expensive and hard to repair, so the researcher wants to replace them with a custom app running on a cheap commodity cellphone.

Ideally, the App should replace the social sensing devices (i.e., Sociometric Badges) with small smartphones to detect different types of social interaction. The current social sensing device has built-in Bluetooth, microphone, and infrared sensors used to capture speaking speed, tone, volume, physical movement, and face-to-face interaction time (frequency/duration). While the social sensing device detects speech data, it does NOT record language or conversation, but only the energy and frequency of verbal interaction for privacy protection. All data is recorded for later dump to a spreadsheet with timestamps of events.

The cellphone sensors should be able to easily handle everything, except detecting face-to-face interaction via IR transceivers. It may be possible to use openCV running on the camera to detect a facing device (not necessarily the actual face), or it might be necessary to figure out how to optically communicate using the cellphone screen and camera.

Specific MEng Contribution:
Identify a cost-effective phone with sufficient sensors. Figure out how to map the cellphone sensors into the human interaction measurements required by the client. Design and implement an app to the specification of the client. The student(s) must be able to understand the requirements of the client and be able to work with client to build the app.

Number of students: 2 to 4

ECE Field Advisor Name: Bruce Land
Email - bruce.land@cornell.edu
Office – 214 phillips hall

ECE Field Advisor Name: Joe Skovira
Email - jfs9@cornell.edu
Office – 211 phillips hall

Outside Field Client Name (if applicable): So-Yeon Yoon
Email - sy492 @cornell.edu
3411 Martha Van Rensselaer Hall