***Social Distancing Detection Algorithm Based on Bluetooth***

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Social distancing is one of the main preventive measures followed to help in controlling the spread of COVID-19. An application of Bluetooth can be used to help people keep the safe distance by generating an alert when the distance between two users is less the 2 meters. Each user will have a wearable node based on BlueNRG-1 which is a low power Bluetooth low energy (BLE). The nodes continuously scan for similar beacons within the range. The design has three areas:

* Risk area: 2 meters or less
* Pre-risk area: 3 meters
* Safe area: more than 3 meters

The proximity detection algorithm will work by advertising and scanning simultaneously. It will send signals and scan for other beacons. If a signal is detected, the distance will be calculated using the formula:

Distance = 10 ^ TxPower – RSSI / 10\*N

TxPower: Transmitted power

RSSI: Received signal strength indication

N: Environmental factor

When the distance is in the risk area a red light will be generated along with a buzzer. If it is in the pre-risk area a yellow light will be generated and in the safe area there will be no alert. The flowchart of the algorithm is shown below.

