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An Algorithm for Crowd Detection Using Beacon Bluetooth Technology

Step1:

Four fixed bluetooth receivers should be placed in four different areas in the venue.

Step2:

The bluetooth receiver should be connected to cloud/server through Internet and handled by a mobile application.

Step3:

Each person enter the venue has to wear his own wearable wristband with beacon.

Step4:

The beacon sends its IP address around frequently.

Step5:

The bluetooth receiver frequently check for IP address of beacons and send them to the server.

Step6:

If the server received more than 10 IP address at the same time from one bluetooth receiver, then a signal is sent to tell the visitors "The north region< for example> has become crowded, please keep a safe distance".

"Flowchart for the Algorithm"

```
                    ┌─────────────┐
                    │   Enter     │
                    │  the venue  │
                    └─────────────┘
                           │
                           ▼
              ┌──────────────────────────┐
              │  The person wear the     │
              │  wristband beacon        │
              └──────────────────────────┘
                           │
                           ▼
              ┌──────────────────────────┐
              │  The beacon sends its IP │
              │  address frequently.     │
              └──────────────────────────┘
                           │
                           ▼
              ┌──────────────────────────┐
              │  The bluetooth receivers │
              │  start to detect the IP  │
              │  address                 │
              └──────────────────────────┘
                           │
                           ▼
              ┌──────────────────────────┐
              │  The bluetooth receivers │
              │  send the IP addresses   │
              │  to the server           │
              └──────────────────────────┘
                           │
                           ▼
                    ◇ the server
                      received >10 IP
                      address from one
                      receiver ◇
            NO │                    │ Yes
               │                    ▼
               │        ╱─────────────────────╲
               │       ╱ Tell the visitors " The╲
               │      ╱  x region has become     ╲
               │     ╱   crowded, please          ╲
               │    ╱    keep a safe distance"      ╲
               │                    │
               │                    ▼
               │             ┌─────────────┐
               │             │    END      │
               │             └─────────────┘
```