DeepBLE: Navigation using Low Energy Bluetooth

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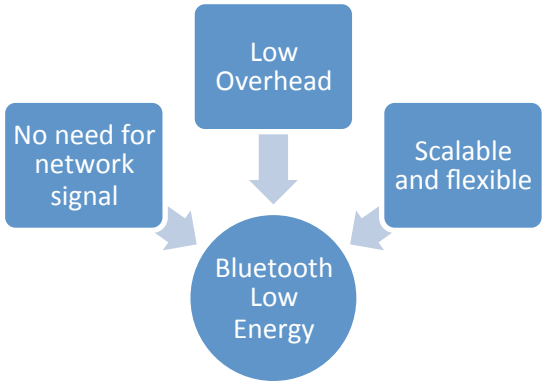
Abstract

With the new Bluetooth Low Energy APIs released by Android, we leverage the geofencing power of BLE in tracking position. We use a network on anchors that communicate with other devices

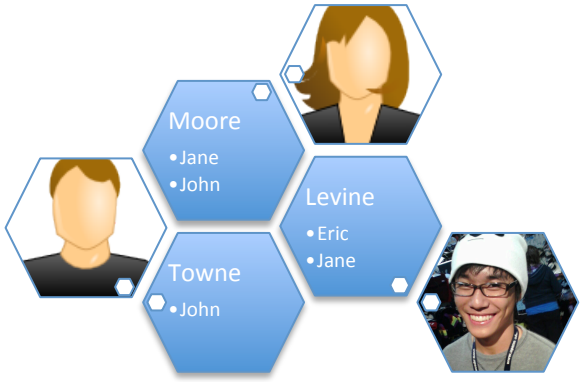
Motivation



More robust/portable than Wifi
Less impact by LOS -> Indoor use

Use Cases

System Design

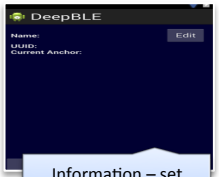


Each anchor broadcasts info about the users and anchors in their field, forming a network.

Screenshots

Main anchor screen
Set your device

List of anchors and their users



Information – set context for anchor

Design Goals

Portable	•Anchors placed anywhere, No framework req.
Enriched Context	•Each anchor/user with contextual information
Scalable	•Easy to add more anchors
Robust	•Fault tolerant, esp. with regards to line of sight

Future Work

- More precise position tracking
- Render map of relative positions
- Graphical display of anchor network

Conclusion

Designed an Android app to track location using BLE, which can be extended to fit a wide variety of use cases