SpyLoc: A Light Weight Localization System for Smartphones

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- Customized DTW algorithm to detect steps.
- Geomagnetic and gyroscope sensor reading to detect rotation/direction.
- Calibrate the sensor reading using at least one range estimation.

What is SpyLoc

- Leverage both the dead reckoning and the ranging scheme.
- RF-Beep[1] is used as ranging scheme.
- Fuses inertia sensors to estimate the direction and the distance travel.

SpyLoc Features

- Exploits the acoustic interface and the WiFi interface of the Smartphone.
- Reduce dependency on anchor points.
- Support high mobility environment.
- Less complexity even the number of user’s devices increases.

Challenges

- Achieving $\leq 1m$ accuracy.
- Dependency on anchor points or Infrastructure.
- Expensive to deploy.
- Highly mobile environment.

Evaluation

- Beacon devices periodically generate a RF beacon message followed by a beep signal.

SpyLoc Architecture

- How range detection works?

SpyLoc Client

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