

Mobile Device User's Orientation

We can accurately estimate which way a mobile phone user is facing regardless of the position of their phone or its orientation.

Background

Knowing which way a user is facing can provide valuable information for the provision of mobile services and applications. The proposed technology utilises inertial sensors that are readily available in mobile consumer devices (e.g. smart phones). While providing high accuracy, the solution is able to cope with arbitrary wearing positions and orientations of the mobile consumer device, making it suitable for use in every-day life situations. This is achieved by an estimation of the user orientation with respect to the reference frame of both the sensing module and the global earth coordinate system.

Benefits

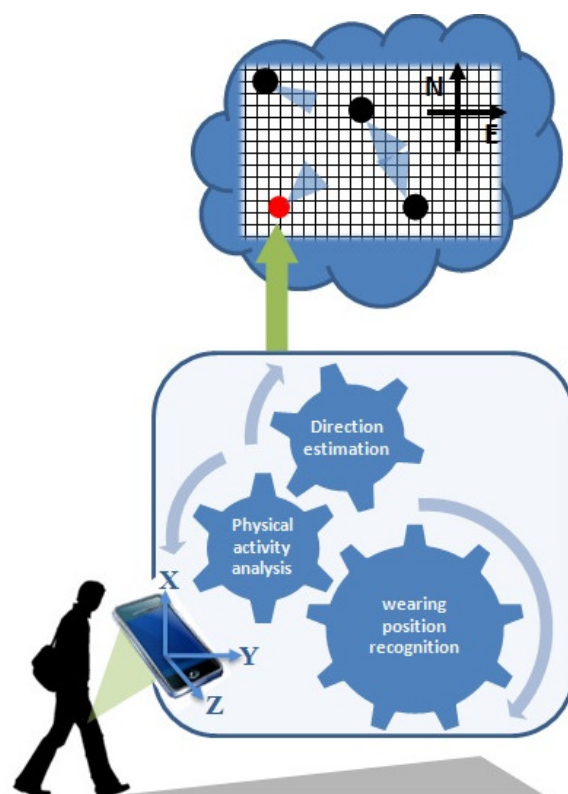
- **Accuracy:** Outperforms the existing state of the art solutions e.g. GPS based systems.
- **Scalability:** Implementable on off the shelf smart phones and does not rely on specialized hardware.
- **User friendly:** Works regardless of the mobile device position and orientation on the user's body.
- **Real-time:** Provides instantaneous estimation.
- **Energy efficiency:** Uses low-energy inertial sensors (instead of relying on energy demanding sensors such as GPS).

Applications

- Positioning applications for indoor or outdoor environments.
- Dead reckoning.
- Real-time user tracking.
- Advanced human to computer interaction (HCI) in smart environments.
- User profiling for real world analytics.
- Improved social network analysis.
- Organizational engineering.
- Real world gaming.

Uniqueness

Our proprietary algorithm is based on body movements and artificial intelligence techniques. It allows us to estimate both the facing direction of the mobile phone user and the position of the mobile phone on the user.



IP

A patent was filed by the University of Surrey in March 2012.

Demo

Demo implemented on Android (HTC phone).

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