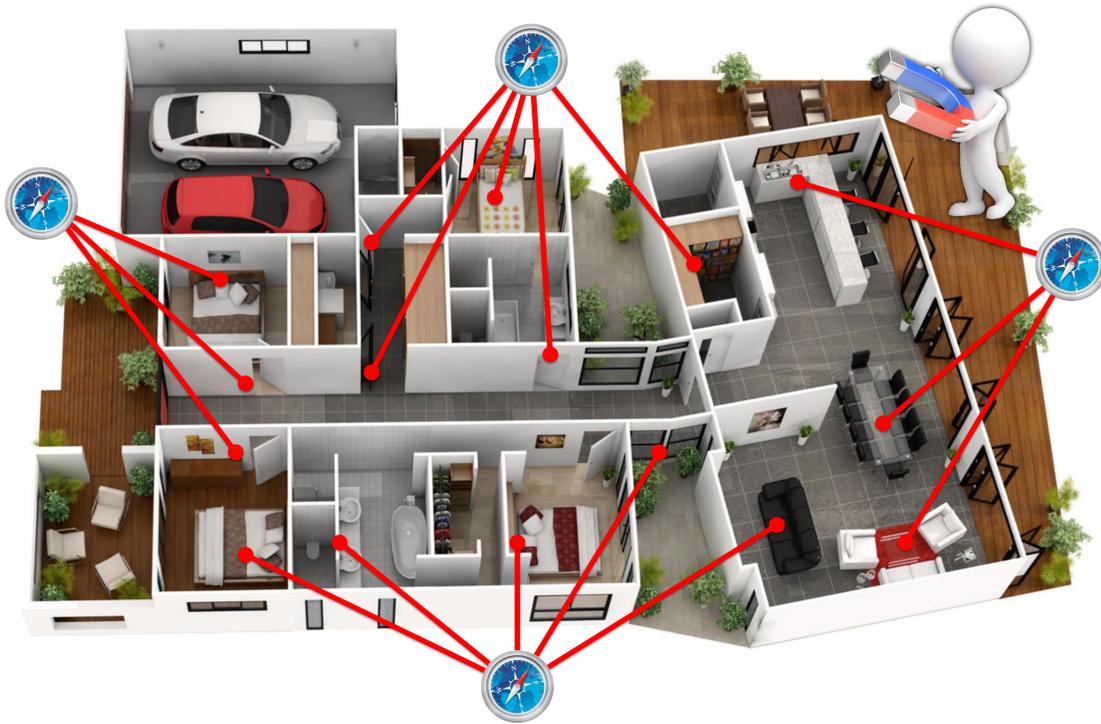


# Activity tracking and indoor positioning with a wearable magnet

Andrei Popleteev, University of Luxembourg

## Magnetic sensing



Wearable: **permanent magnet**

- Carried by the user (in a ring, bracelet, jewelry, clothes)
- No batteries required
- Water- and shock-proof

Sensors: **3D digital compass**

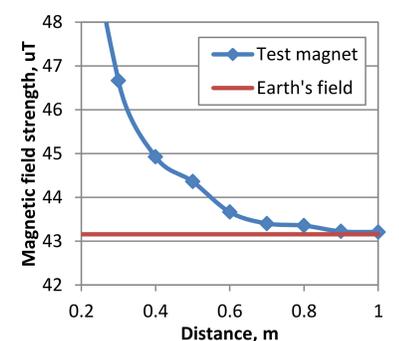
- Installed in monitored places
- Can be hidden in furniture/walls
- Low power consumption

## Advantages

- Power- and cost-efficient
- Respects user's privacy
- Works in humid areas
- Readily available

## Challenges

- No identity
- Limited range
- Precision is hard
- Magnets are sticky



## Applications and proof-of-the-concept experiments

- Ambient assisted living
- Indoor localization
- Activity tracking
- Sleep monitoring
- Touch-free interaction

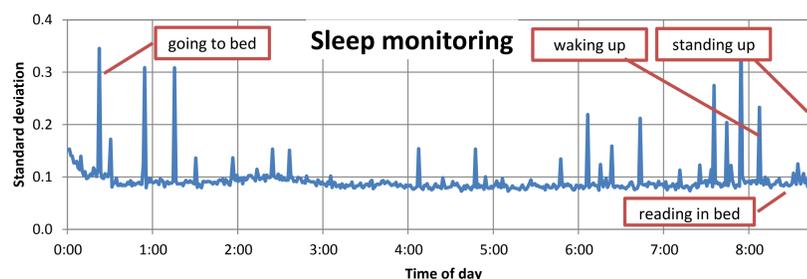
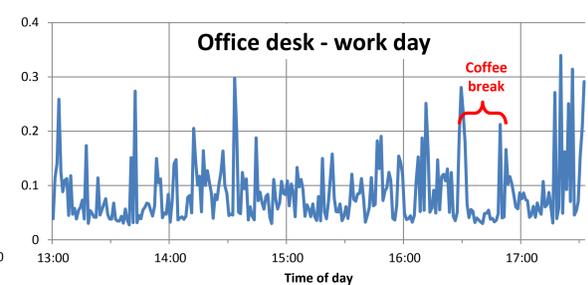
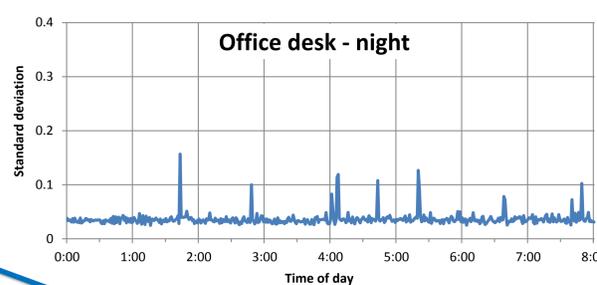


Image courtesy of S. Afshari, A. Popleteev, R. McCall, T. Engel. Magnetic interaction with devices: A pilot study on mobile gaming. NordiCHI-2014.



[andrei.popleteev@uni.lu](mailto:andrei.popleteev@uni.lu)

This work was supported by the National Research Fund of Luxembourg (grant number C14/IS/8311593 – INDOORS project)

