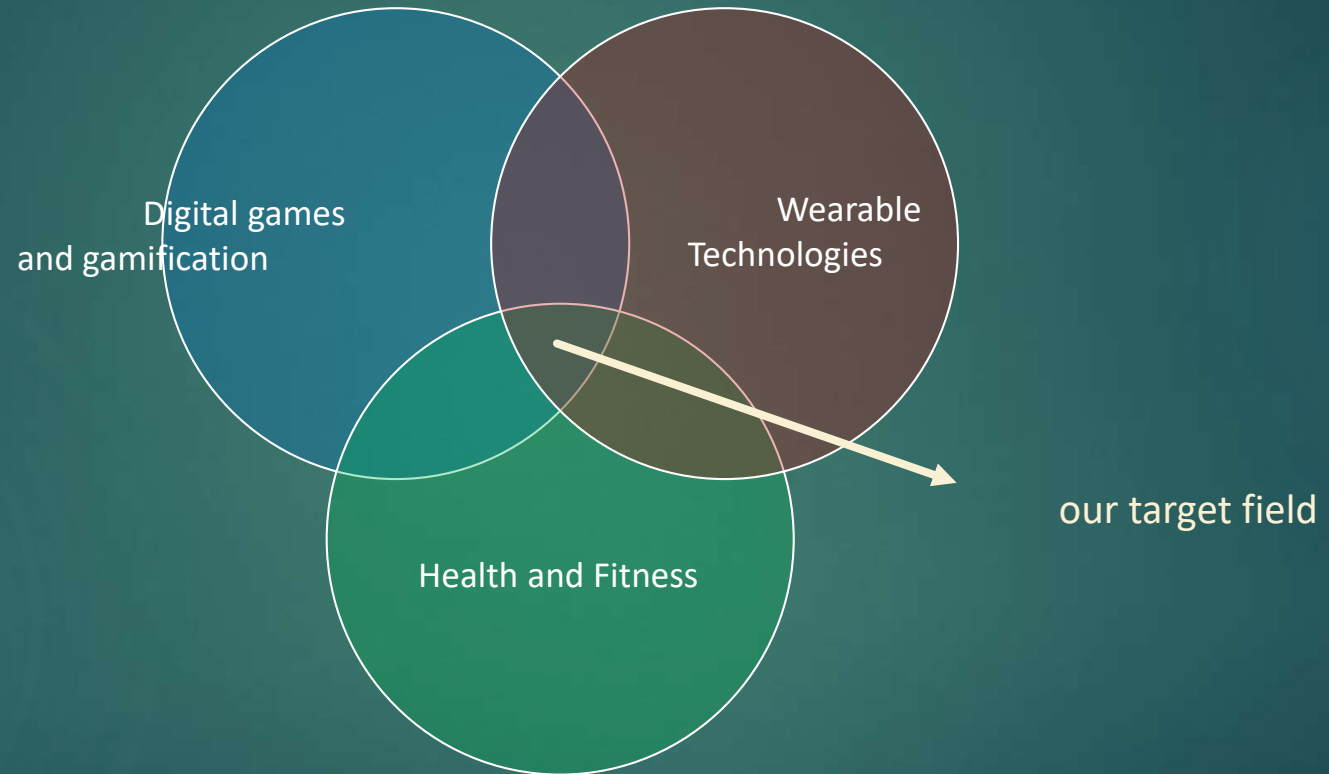




Using Gamification and Wearable Activity Trackers to Promote Active Lifestyle

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Motivation



Application: StrayBird



Short-term Study



Long-term Study

- 70 days, 36 participants
- 3 groups: basic, full, updating
- Features: social, real-time gameplay, customization
- Pre, post-study questionnaire, in-game behavior data monitoring



Study result

- ▶ Engagement and game-play are highly linked.
- ▶ The number of game features could have impacts on user motivation towards the gamified exercise system.
- ▶ Consistent updates (gradual addition of new features) not only resulted in an increased usage of the application, but also had positive impacts on the actual amount of workout activity.

Player Modeling

- ▶ 24/7 activity tracking
- ▶ Recommendation
- ▶ Gamified application

Human Activity Recognition (HAR)



Selection of attributes and sensors

- ▶ Acceleration
- ▶ Location
- ▶ Environmental attributes: temperature / humidity / audio level / light intensity
- ▶ Physiological signals: heart rate / respiration rate / skin temperature / skin conductivity / ECG / EMG / EEG
- ▶ Information: age / gender

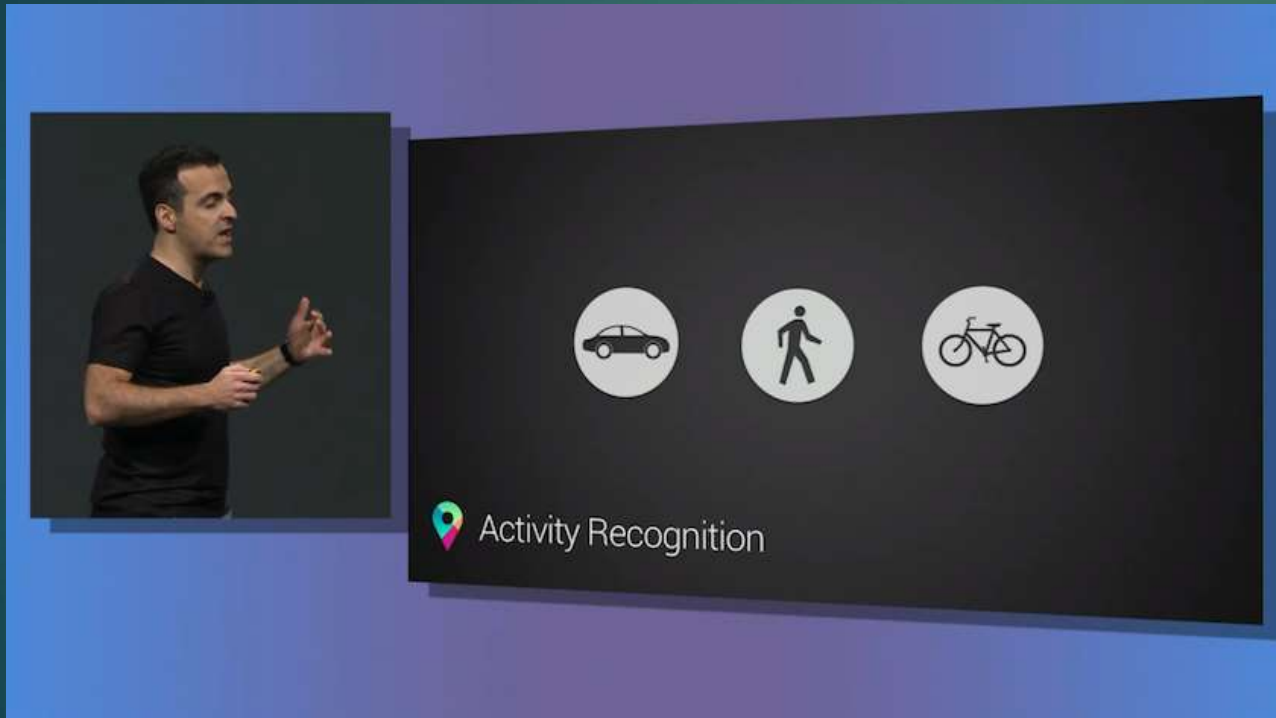
Main issues

- ▶ Sampling Rate and Window Length
- ▶ Energy Consumption
- ▶ Objectives and Associated Task Types
- ▶ Processing: server / local, online / offline, real-time / non-real-time
- ▶ Cost
- ▶ Safety
- ▶ Privacy

Types of activities recognized

Group	Activity
Ambulation	Walking, running, sitting, standing still, lying, climbing stairs, descending stairs, riding escalator, riding elevator
Transportation	Riding a bus, cycling and driving
Phone usage	Text message, making a call
Daily Activities	Eating, drinking, working at the PC, watching TV, reading, brushing teeth, stretching, scrubbing, vacuuming
Exercise/fitness	Rowing, lifting weights, spinning, Nordic walking, doing push ups
Military	Crawling, kneeling, situation assessment, opening door
Upper body	Chewing, speaking, swallowing, sighing, moving head

Android ActivityRecognitionAPI



Multi-sensor



Thanks