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Human activity recognition with opportunistic sensing



The OPPORTUNITY activity dataset



We develop **opportunistic activity and context recognition** systems in ambient intelligence (AmI) environments.

They increase user comfort, system robustness, and scalability by novel opportunistic sensing and machine learning methods

Activity rich: 12 subjects, 25 hours data, >30'000 annotated gestures Sensor rich: 72 sensor, 10 modalities, sensing body, objects, environment Roggen et al., Collecting complex activity datasets in highly rich networked sensor environments, INSS 2010 http://vimeo.com/8704668

Dataset management & annotation tools



The OPPORTUNITY framework

Users and Applications

Pervasive/Ubiquitous Computing Systems, Device Ecologies, Sustainable AmI Environments, Implicit or Explicit Triggering of Sensing Missions, .



Bannach, Lukowicz, Integrated tool chain for recording, handling, and utilizing large, multimodal context data sets for context recognition systems, Proc. 2nd Workshop on Context-Systems Design, Evaluation and Optimisation (CosDEO), 2011

Kurz, Ferscha et al., The OPPORTUNITY Framework and Data Processing Ecosystem for Opportunistic Activity and Context Recognition, International Journal of Sensors, Wireless Communications and Control, To appear.

Highlight: Minimally user-supervised adaptation

Adaptation to the **user's perception** of the **system's**

Technologies



Highlight: Dynamic adaptation in sensor networks

Use new sensors without training in open-ended environments





Sensor



Sensor 1

Sensor 1

