Towards Real World Activity Recognition from Wearable Devices
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Idea

- Physical Human Activities (Wearable Devices)
  - varying device position
  - movement behavior may change
  - cross-subjects activity recognition
- Activities of Daily Living
  - indoor vs. outdoor
  - level of activity (grooming vs. shower)
  - availability of context information

Machine Learning (Trees, Networks)

- Physical Activity
- (Emotional) Condition
- Location / Weather
- Item (Usage)

Probabilistic Model (Markov Logic)

- Activities of Daily Living

Process Mining (Conformance Checking)

- Analyzing the Daily Routine

Scenario

- supporting and observing elders in everyday activities by interpreting and relying on ...

  - smart devices, environmental influences, location and time, context-dependent

Physical Human Activities [1,2]

- Body Sensor Network
- Base Model
- Online Learning
  - update
  - smoothing
  - classification result
- Updatable Model
- Active Learning
- New labeled data set
- Ask User

Activities of Daily Living (Smart-Home) [3]

- Observed predicates
  - 0.5: hot meal
  - 0.5: cold meal
  - 0.0: tea

- Hidden predicates
  - Freezer & Stove
  - Hot meal

Research Issues

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Definition

ADLs embody a fusion and interpretation of single physical human activities, also known as locomotions, related to the current environment and situation.

References


http://sensor.informatik.uni-mannheim.de