Recognizing Human Activities and Detecting Falls in Real-time

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MOTIVATION

- The world's population is aging rapidly, threatening to overwhelm the society's capacity to take care of its elderly members
- Approximately half of the hospitalizations of the elderly are caused by falls
- Development of innovative ambient assisted living (AAL) technologies to help the elderly live independently for longer and with minimal support from the working-age population
- AAL systems must understand the user's situation, making activity recognition (AR) and fall detection (FD) essential components.

The RAReFall System
- Real-time Activity Recognition and Fall Detection

Methodology

Evaluation

International competition in activity recognition – EvAAL

- The competition setting is closer to real life than most AR evaluations, so our result at the competition is evidence of RAReFall's practical applicability.
- Similar implementations of the RAReFall system are widely used in observational studies (evaluated by hundreds of people) of two European projects: Confidence and Chiron.
- A smartphone implementation is considered for future development.
- Ultimate goal: a system that has only one wearable device comprising several sensors, such as: accelerometer, ECG, body temperature, body humidity, etc. The system should not only recognize the activity of the user, but also should be able to reason about the user’s behavior and health in general.