Radar-Based Activity Recognition in Smart Environments

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CONTEXT

The "Casa Viva+" project aims at providing autonomy, control of own life, and better living conditions to older adults staying at home. To achieve this objective, various novel solutions will be deployed in a real home, which is currently being built near Aveiro. In this context, it is important that the home can gather relevant information on its users in a minimally intrusive way, including information on their activity (e.g., walking, sitting up/down, exercising), which can then be used to motivate them to be more active, as well as allow people caring for them to keep up to date on their physical activity.

MAIN OBJECTIVES

Based on recent research on radar-based human monitoring performed at IEETA, this work has the following two main goals:

- Propose and evaluate a solution for human activity recognition based on one or more radars;
- Implement and deploy a prototype of a system for monitoring activity in smart homes, including suitable user interface(s) for access to relevant information.

TENTATIVE WORK PLAN

- Acquire knowledge and skills regarding radars, human activity recognition, and human-computer interaction, profiting from previous work at IEETA.
- Update the state-of-the-art on radar-based human activity recognition, focusing on the last years.
- Propose and evaluate method(s) for human activity recognition using radar data.
- Implement and deploy a prototype of a system that gathers and provides information on the user's activity over time.
- Writing reports and documentation.

NUMBER OF STUDENTS

4 or 5

RELATION TO PROJECTS

This proposal is related to projects "Casa Viva+" (funded by OLI and INOVADOMUS in its initial phase) and "CHHA – Connected Home for Healthy Ageing" (within the international project "IMAGINE-B5G").