OPERATION RADAR STORM

A PLATFORM TO SUPPORT RESEARCH ON RADAR SENSING

Keywords: radar technologies, remote sensing, sensing infrastructure, management platform, modular architectures, user-centred design, data streaming

Supervisors: Samuel Silva (sss@ua.pt) , Ana Rocha (aprocha@ua.pt), Carolina Gouveia (carolina.gouveia@ua.pt)

Collaborators: Daniel Albuquerque, António Teixeira

CONTEXT

Radar technology has been gaining momentum for a wide range of applications including interaction (e.g., gestures), movement detection, activity monitoring, and biophysical sensing (e.g., respiratory patterns). There are several characteristics of this technology that make it an interesting privacy-preserving alternative to video and a noninvasive approach for sensing. This research is often conducted considering radar development boards that can be connected to a computer to acquire the data that is, then, used to develop and test new methods. However, this often entails a set of limitations: the radar setup is redone every time; there is only one radar being used where two or more radars might provide better data; the equipment needs to be shared among team members that are working on the topic; every time a demo needs to be performed, everything needs to be setup, again, and Murphy is always present.

In face of these challenges, this project aims to create the software infrastructure for a new radar laboratory where several radar equipment will be mounted full time, in fixed positions, and a management dashboard will allow accessing the data being collected for the different equipment, by any number of users. This will also allow, for example, that the same equipment is used to support a demo, in the lab, while someone is collecting data for other research purposes.

OBJECTIVE

Develop a framework and management platform for the new radar laboratory at IEETA.

TENTATIVE WORKPLAN

- Get acquainted with the existing radar technology and with the overall pipeline followed to obtain data from the development boards (code for this already exists)
- Adopt a user-centred approach to understand the motivations and needs of the radar research laboratory
- Define a list of requirements for the framework and platform to develop
- Conceptualize a modular solution that fits the requirements
- Iterative development and evaluation of the proposed solution
- Writing technical and scientific documentation

CONTEXT

This work is developed in line with ongoing research at IEETA regarding radar technologies for interaction and biophysical sensing.