Assessment of Digital Biomarkers at Home by Radar

**Background:** World-wide, the life-expectancy of people is increasing. Due to balanced diet and less physically demanding jobs, elderly people stay longer healthy. Also, supporting services like Spitex allow them to live longer in their own homes. All in all, it is safe to say that quality of life for elderly people has been increasing steadily over the last years. On the other hand, this development has led to new challenges. Whether it’s because of early-stage dementia or to track symptoms of Parkinson’s Disease, it is often crucial to observe people’s activities of daily living (i.e., movement and physiological parameters) within their home. Now that people are living longer in their own homes, new measures (i.e., digital biomarkers) for home monitoring need to be developed.

**Aim:** Therefore, the aim of this project is to develop digital biomarkers based on radar technology in an instrumented apartment.

**Materials and Methods:**
This thesis will consist of three parts. In the first part, the student will learn the concepts and evaluate different radar technologies. In a second step, the experiment will be conducted in the NeuroTec apartment (NeuroTec Loft, SITEM, Inselspital). Third, algorithms to calculate digital biomarkers will be developed.

**Nature of the Thesis:**
- Development of algorithms to process the data: 90%
- Experiment in healthy subjects: 10%

**Requirements:**
- Basic knowledge in data analysis
- Good programming skills
- Interest to work with healthy subjects

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**Figure:** Apartment where the experiment will be conducted