Fostering Aging-in-Place and Autonomy in Elderly Persons through Intelligent Tracking

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Community Partners

Foulkeways at Gwynedd
CCRC; Gwynedd, Pennsylvania

Bluebonnet Place
Assisted Living; College Station, Texas

Broadmoor Place
Assisted Living; Bryan, Texas

Project Overview

Research Activity   Community Engagement

Wearable Sensors & IPS

How do we best integrate these sensors into the community?

Activity Recognition

What activities should we recognize?

Can we recognize these activities accurately?

Caregiver Application

How do we design an application that augments the current caregiving paradigm?

Project Vision

Improve the quality of life for senior living residents and reduce the burden of care on senior living caregivers

Project Overview

PG Activities

Problem

The level of assistance elderly individuals require performing Activities of Daily Living (ADLs) often informs the type and extent of care required. Currently tracking the performance of ADLs is done manually and automated systems recognize only a few ADLs and/or remain untested in real-world settings.

For this system to successfully meet the needs of the target communities the system will need to be able to accurately and unobtrusively track ADL performance and intuitively convey that information to caregivers.

Target Communities

Foulkeways at Gwynedd (CCRC; Gwynedd, Pennsylvania)
Bluebonnet Place (Assisted Living; College Station, Texas)
Broadmoor Place (Assisted Living; Bryan, Texas)

Further Refined Activity Recognition Algorithms

Dr. Stacey Lyle, an expert on IPS systems, is a PI on the IRG proposal

IRG Proposal Submission

Developing initial caregiver application

Further discuss features and testing with communities

Legend

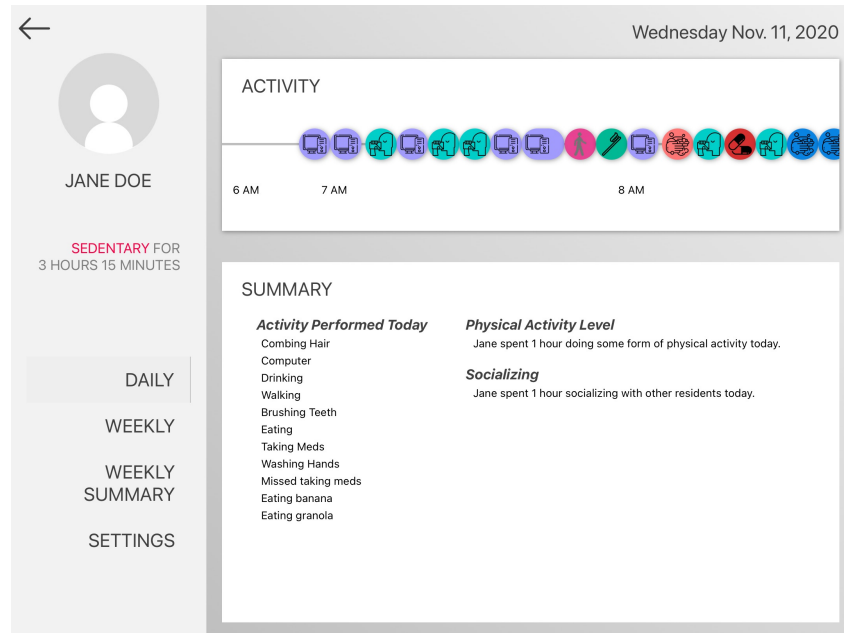Completed Activities
Ongoing Activities
Anticipated Activities

Project Update

As COVID-19 has impacted our ability to meet with the communities as frequently as we would like, much of our activities have been focused on refining our algorithms and developing initial versions of the caregiver system.

Caregiver Application

Algorithm Development

We developed and published algorithms that can recognize when individuals take medication (Cherian et al. 2021) and buckle their seatbelt (Leland et al. 2021)
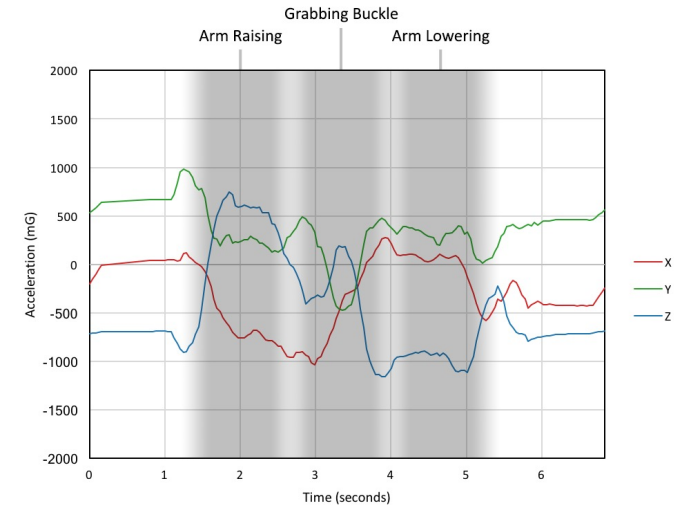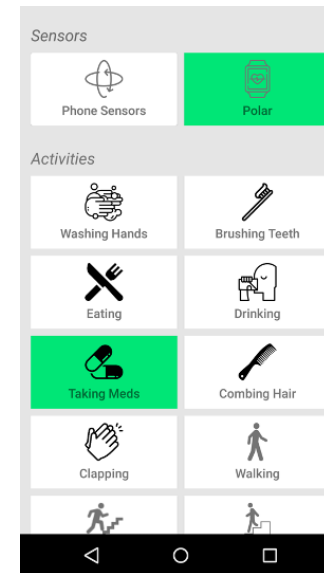
IPS System

Dr. Stacey Lyle, an expert on IPS systems is a PI on the IRG proposal.

Project Evolution

We learned that caregivers prefer to determine the type of intervention provided. Thus, the focus of our system is to provide caregivers with information on ADL performance in an intuitive manner. That being said, we will work with the community to evaluate whether our system can facilitate a broader range of interventions to allow caregivers to better tailor their care to residents.

In our discussions within the research team we discussed how best we could obtain activity data from elderly participants to best train and evaluate our algorithms. Our current thought is to use environmental sensors to aid in labeling sensor data, though data collection procedures will likely evolve as further we have further discussions with the communities and conduct feasibility studies.