

Significant number of people with dementia are at risk of wandering. These individuals may get hurt, cause distress to families and caregivers, and require costly search parties. Our goal is to study wandering among people with Alzheimer's Disease (AD) in order to better understand if technology can help in locating them, preventing harm, and lowering distress to the families. In order to study wandering, the research team will analyze data to find out if there exist patterns of wandering that may help predict future incidents and locate the missing.

Our team has great experience with analyzing GPS data in order to predict movements. We believe that this experience can be applied to movement data of people with AD. Thus, the purpose of the project is to collect GPS and medical data for people with AD and use that data to analyze movements.

GPS trackers will be used to collect spatiotemporal data about time and location. This type of data is routinely collected by GPS trackers. Surveys of individuals with AD and caregivers will be used to establish AD stage, medical history, demographic, and socioeconomic status. The survey will be repeated every 3 months to establish changes in the individual's condition. Caregivers will also be asked to record specific wandering incidents, so they can be linked to the geolocation data. Collected data will be used to test the feasibility of using machine learning algorithms to detect patterns of wandering. Spatiotemporal clustering will be used to detect normal locations where the participants typically are. The actual analysis will focus on anomalous locations that don't follow normal patterns of movement. These locations will be passed to machine learning algorithms in order to check for existence of patterns within the non-typical movements. This project will enable data collection for a long-term experiment to test if GPS data can be used to track progression of Alzheimer's disease. The project will result in the creation of protocols and the infrastructure needed for monitoring individuals with AD for several years

The project has been approved by George Mason University's Institutional Review Board (1052716-1). Our team follows strict procedures to protect confidentiality and privacy of all participants. Data are stored and analyzed in secure environment with strictly controlled access. Additionally, participant identifying information are separated from rest of the data, and used only for contact when repeated survey is needed.

REQUIREMENTS

Participants and caregivers of this study will be asked to:

1. Complete initial survey (about 10-15 minutes).
2. Use provided GPS devices that record movement of the participant, charge the devices and insert participant's shoes
3. Complete very short follow-up survey every 3 months.
3. Report all incidents in which the participants were lost during the study.

RISKS

Potential risks involve loss of privacy if security procedures are not strictly followed and individuals represented by the data are identified. The loss of privacy may result in distress, embarrassment, or discrimination. Strict

procedures, personnel training, and implementation of appropriate physical, technical and administrative security measures during all aspects of the project will minimize the risk.

BENEFITS

The participants will receive free SmartSole devices and monitoring for one year. The participants will also receive training and help in setting up SmartSole devices. Because the participants will be recruited from among those who already have past history of wandering, such service may provide additional protection against being lost and peace of mind to families and caregivers. In case of the participant being lost, participants should contact SmartSole service that can provide immediate help in locating.

Contact Information

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