Client Out-of-the-House Detection

Why it matters: Monitoring time out of the house constitutes one element of supporting older adults' aging in place. An individual's out-of-the-house pattern can offer insight into their health and safety. Any significant change in this pattern represents a potential area for intervention by care providers. Longer/shorter or more/less frequent trips out of the house could signal mobility or cognitive challenges, while going out at night could reflect wandering behavior. The Sovrinti system's passive monitoring offers real-time out-of-the-house detection and long-term data that enables care providers – both formal and informal – to better-support older adults' independence.

Background: The Sovrinti system utilizes high temporal, spatial, and device use change detection to autonomously identify and quantify activities of specific individuals in a private residence or senior living facility. The examples shown are from a large home care provider where the Sovrinti system is installed in the homes of clients. The examples below represent around 3 months of data from a female client residing alone in a one-bedroom, one-bathroom apartment. The client receives 19 hours per week of assistance from a professional caregiver.

Example Data: A location-detection device (PTag) was attached to the client's cane. The client reported using the cane primarily out of the house. Figure 1 shows a 5-week sample of cane PTag location data by time of day, with each ring representing one day on the face of a 24-hour clock. Inner rings reflect earlier dates progressing to the outermost ring, 3/31/23. As seen by the majority bright blue, the client leaves the cane in the dining room and takes it with her when she leaves – indicated by the white gaps when the PTag attached to the cane is not detected in the apartment.

From installation (1/25/23) to 4/24/23, 60 trips out of the home have been detected. A "trip" is defined as the cane PTag not being detected for 5 minutes or longer. The client's outings average 2 hours, 23 minutes. As seen in Figure 1, the client's trips out tend to be in the late morning to early afternoon. Over the course of the pilot program, there have not been any instances of the cane Ptag being absent during nighttime hours (11:30pm – 5am). The Sovrinti system allows for alerts to notify caregivers or family members in real time of trips out of the house during the daytime, nighttime, or both.

Summary: In this case example, an individualized out-of-the-house pattern is identified for a female client receiving 19 hours of caregiving per week. Through location and activity detection, the Sovrinti system offers actionable insight into clients' habits and safety. Monitoring patterns of out-of-the-house time and identifying anomalies (e.g., nighttime outings) enhances care providers' capacity to support older adults' independence.

For Further Analysis: Corresponding ambient light, event, and attribution data is available to give greater context to the client's outings. Additional analyses might examine the client's pattern of activity prior to and upon returning from an outing, trends in the timing of the client's trips out, and patterns of caregiver assistance or accompaniment surrounding the client's outings.

Figure 1
Cane PTag Location
2/22/23 – 3/31/23

The Living Room — The Dining Room — The Bedroom — The Bathroom — The Kitchen — The Hallway
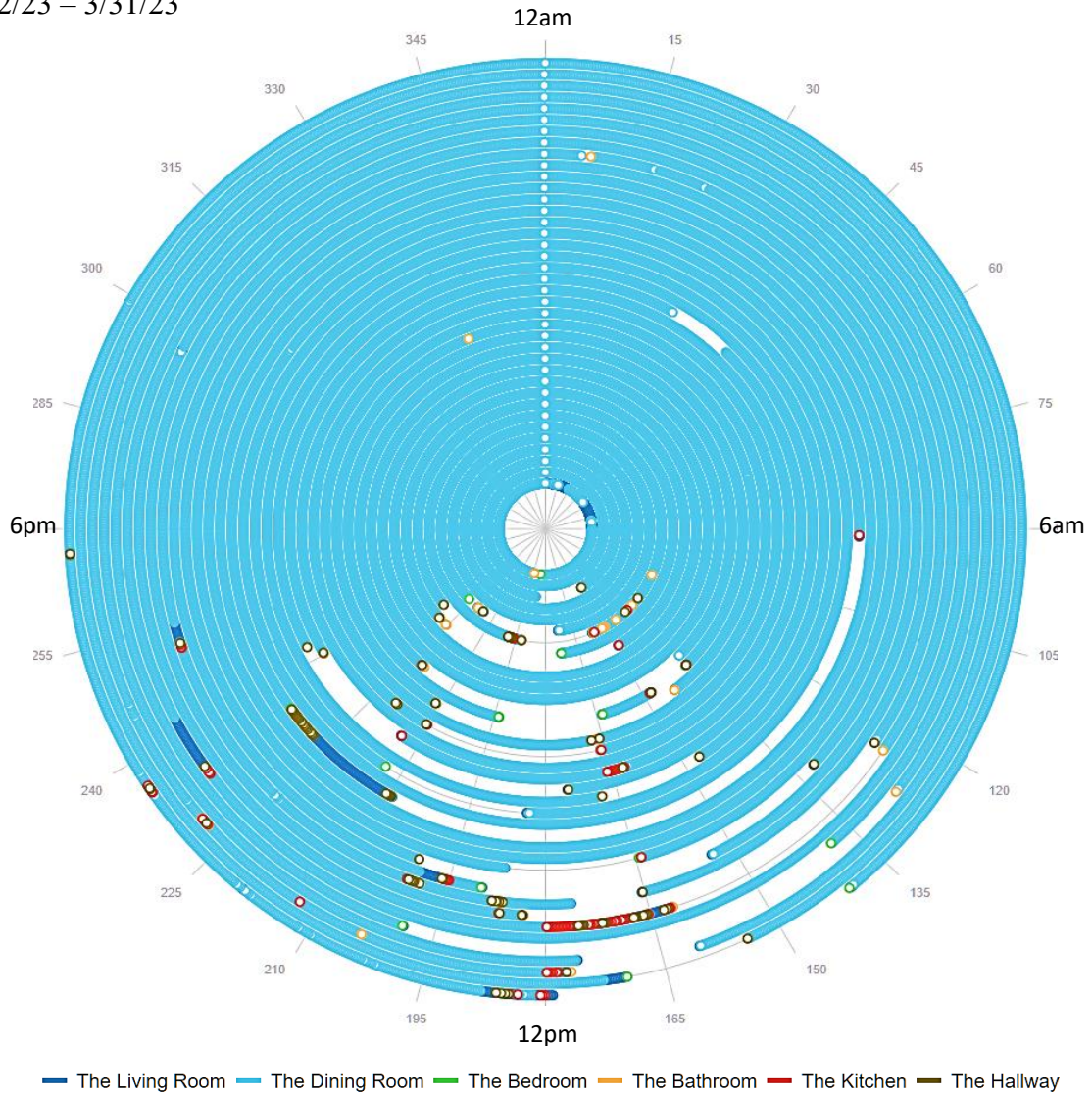
*Note that the gap starting around 2am on Figure 1 represents a brief interruption in system connection rather than a trip out of the house. Indications of service interruption will be differentiated graphically in an upcoming build.