TrackIt: A Team-Based Application for Health and Wellness Monitoring

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Abstract
Health and wellness monitoring is an emerging area for mobile applications. One problem that has not been addressed is that tools have mostly focused on the individual and ignore many aspects of health and wellness that depends on teams. These teams could either be a team of professionals or a support network including friends and family. We present a team-based tool, TrackIt, that enables tracking of both activity duration and location, and enables users to be part of multiple teams. TrackIt supports distributed generation of tasks that belong to multiple people, each of whom can report on status and monitor progress, and will provide intelligent collaboration tools and activity recognition capabilities.

Introduction
Mobile applications in health care is an emerging area of development (Ahtinen et al. 2009; Alagöz et al. 2010; Arsand et al. 2010; Blake 2008; Boulos et al. 2011; Hache, Lemaire, and Baddour 2011; Holzinger et al. 2010). They enable users to track and monitor a variety of activities such as food habits, physical activity, medication, appointments and many other health-related tasks and goals. The ease of recording and retrieving information opens up new possibilities for interactions to improve the livelihood and well-being at a large-scale as the technology becomes ubiquitous with inexpensive mobile consumer electronics.

There is one key aspect of health behavior that has gone unaddressed in most mobile health applications: that people are parts of teams. Most applications focus on individual tracking and information delivery. However, there are many situations where an individual’s particular health goal involves many people. For a health issue, one may be involved with many professionals — such as doctors, nurses, pharmacists, and physical therapists — as well as family members. These members are all potential generators and consumers of information. Another way in which people are members of teams is in support groups for goals such as smoking cessation, weight loss, or exercise. As the increase of social media and the ease of interconnectivity between individuals continues to expand, the use of social connections to support health-related goals is bound to grow. We have developed TrackIt to provide support and better understanding not just to the individual with a medical condition or wellness goal, but to everyone in their surrounding support group.

TrackIt
The initial version of TrackIt delivers the following capabilities: (1) the ability to create and join teams, (2) the ability to add tasks and track when and for how long they are active, (3) a distributed note gathering process, (4) location-based monitoring, and (5) location and task-based reporting capabilities for the team. In Figure 1, we show various screenshots of TrackIt that display its team-based capabilities. Users can be invited to join a team or create their own teams. Once they join a team, they can access the resources and roster of that team. In our example, a user who is part of a Diabetes support group has been invited to join a Hypertension prevention support group. As part of the Diabetes support group, the user gets access to resources such as quick links to a diabetes mailing list, website, as well as medical professionals who are part of the group.

In Figure 2, we show various goal-based screenshots. Goals or tasks can be added by any member of the team for any other members of the team. The goals and the tasks can be made into a hierarchy which allows for a network of subtasks at various levels of abstractions. Permissions decide who can add and view various subtrees of the goal/task hier-
archy. In addition, permissions can decide who can update and modify the status of any goal or task in the tree. We also include the ability to mark exactly when a task was started and stopped to enable users to see how long they spend on particular activities such as exercise.

With TrackIt, user locations are logged while tracking their progress and stored alongside the timestamped data. This will enable the system to infer activities based on surrounding log entries. With the large volume of data being stored by users doing various in-app activities, multiple report views are available to help users and their support group specialists to analyze the data and interpret it corresponding to their own role and perspective.

Members of the team are allowed to annotate various tasks and goals with notes. This may be important for professionals to leave information for each other or to a patient or family member. In a social setting, this may be useful for friends in a support group to encourage each other or leave valuable information that may be useful to many people involved in a common goal. TrackIt enables team members with permission to access the logs of other users for whom they have access. For example, this might include the timeline of activities for the user. Appropriate users can add or modify these timelines to correct or augment them if necessary. Another record involves location traces of where the users are or were. Users can toggle on the location tracking services, which may be useful if users wanted to understand where they were over time or if they want to allow other users to find them. Additionally, tasks can be marked at locations, so that user’s can plan daily activities (e.g., doctor’s appointment, pharmacy, exercise, family visit) with a map-based view of tasks.

**Summary and Future Work**

TrackIt is a mobile-applications focused on allowing teams of people to participate in tracking and monitoring activities. This is particularly relevant to health and wellness related applications for goals involving both medical professionals and social support. Human activities are becoming group activities more than individual activities, and wellness software must reflect this reality. Future directions involve the embedding and transmitting of more sophisticated tracking and reporting such as multimedia including photo and video reporting, automatic identification of current activities based on log entries and phone-based sensor data such as GPS and accelerometer, and intelligent multi-agent collaboration and incentive mechanisms.

**References**


