A proposed process model for personal health monitoring

Adrian Busson, George Buchanan, Simone Stumpf
City University London
Centre for Human Computer Interaction Design
adrian.busson.1@city.ac.uk  @Adrian_Bee

INTRODUCTION

- 22% of American adults with chronic conditions monitor their health using medical devices in unanchored settings [8]
- Monitoring activities burden and challenge users; research commonly focuses on the challenges of data capture and entry (e.g. [21])
- Some work has looked at the process of personal health monitoring (e.g. [16]) but primarily focus on the fluctuations of tracking behavior relative to user’s state of health

The community lacks a holistic understanding of the activities involved in personal health monitoring.

Defining the process will identify additional challenges faced by patients as well as opportunities for future work.

RELATED WORK

Personal health monitoring is akin to Personal Informatics (PI) and a scaled version of Knowledge Discovery in Data (KDD); processes in these domains can be used to inform a model for personal health monitoring:

The PI process describes the activities undertaken by a user from selecting a tracking device to taking action based on new knowledge [15].

However, this process:
- Underemphasizes the value of intention
- Inaccurately portrays iterations involved
- Generalizes the socio-technical activities
- Focuses on taking action as an outcome

The KDD process details actions required to derive new insight from data sets by applying algorithms to vast amounts of data [7].

However, it focuses on:
- Dataanalysis experts as users
- The use of large amounts of data
- The analysis of non-personal data
- Previously collected information

While not directly transferrable, these provide a starting point for a personal health monitoring process

PROCESS MODEL OF PERSONAL HEALTH MONITORING

Our proposed process model of personal health monitoring extends upon those defined for PI and KDD: we emphasized activities that were overlooked, separated those which were bundled, and identified iterative paths.

FOCUS OF PAST RESEARCH

18 recent personal monitoring/informatics publications were examined. Gradients were applied to indicate stage(s) focused on in the research:

- Dark areas indicate the target of current research
- Light areas indicate gaps and opportunities

FUTURE WORK CONSIDERATIONS

Exploring the overlooked stages - both from the perspective of users and the role of devices - are areas for future work.

Several other questions can inspire new research as well:

- How best can the proposed process be validated?
- How do devices currently support or challenge the activities in each stage?
- Do current device designs adequately meet the intentions of the user, support reflection, and enable accurate insight?
- How might new technology facilitate the holistic process?
- How do users identify which systems will best meet their needs? What are current devices lacking, that other tools offer?