Theme issue on electronic memories and life logging

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1 Foreword

In 1945, Vannevar Bush described an imaginary device, which he called *Memex* in his famous article called “*As We May Think*” [13]. He envisioned the device to be able to record and link books read, microfilms watched and other personal archives. Today, in the era of digital technology, Bush’s visionary article can be seen as the first effort toward establishing the field of life logging. A system or tool that can digitally sense people’s state and contextual information in a continuous manner and record this information for long-term access is therefore often referred to as *life-log tool*.

Life-logs can benefit users in many ways. For instance, it has been shown that life-logs augment the user’s memory [12], and there are tools developed for this purpose [8]. Life-logs can further be used to record information about oneself, which can benefit people with learning [1, 2], psychological studies [15], user modeling and personalization [4, 6], social studies [3], historical studies, story telling [4, 11] and health monitoring [5, 9, 10]. To date,

there are only few life-log tools with very restricted features available on the market. This means there is an opportunity for advancing the field and revealing the benefits of life logging through research and commercial efforts toward building and better understanding the value of life-logs.

Recent advances in sensor networks, pervasive computing, communications and storage technologies enable us to sense and collect information about our life events digitally. The process of logging individuals’ experiences is not limited to personal information: it can also be extended to recording community experiences and their online activities. It can be expected that in the near future, life logging systems and electronic memories are going to have significant impacts on our lives, perhaps even similar to the revolution brought by the Internet and mobile phones.

Digital or electronic memories are records built up as a result of life logging processes. In a more technical sense, the data set of life logging is referred to as *e-memory*. Based on Kröner et al.’s [7] suggestion, here we categorize digital memories into *personal*, *community* and *object* memory [14]. The personal memory is the result of life logging that targets a single user, while the community memory is the result of life logging that collects and creates a digital memory from a group of users. In other words, one can refer to community memory as a collection of personal memories, yet community memory is mostly concentrated on one or a few data sources, such as only twitter posts. However, the community memory is not necessarily restricted to a community behavior, but it could be used to reveal personal information about each person in that target community. There are no specific borders between the personal, community and object memory categories, and sometime research endeavors can fall into more than one category.

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The aim of this theme issue is to bring together scientists, designers, developers and entrepreneurs to present their research and systems for life logging and electronic memories.

Rawassizadeh et al. describe “UbiqLog”—a generic mobile phone-based life logging framework—which employs concepts of mobile sensing to create a life logging tool for pervasive devices. The framework addresses major challenges of life logging such as digital preservation in the context of pervasive devices through a new architecture and data model that can serve as reference model for future life logging efforts.

Atz describes his research on “Experience Sampling of Stress” and more specifically evaluates three methods for recording stress. The findings of this research among other things suggest that minimizing the complexity of input collected from the user yields better results than reducing the number of prompts. Buchmann et al. in their paper “Re-Identification of Smart Meter Data” focus on privacy aspects of smart meter information and establish a link between a digital memory (of household information) and smart meter data. They show that time series produced by smart meter data can be used to reveal daily routines of household members or even the presence of a specific electric device. Since these data objects are highly privacy sensitive, the authors analyzed to which extent energy consumption records, collected by industry, are prone to re-identification. The proposed research is an important contribution regarding privacy aspects of such digital memories.

Ivonin et al. with “Unconscious Emotions: Quantifying and Logging Something We Are Not Aware Of” and Martin et al. with “Activity logging using lightweight classification techniques in mobile devices” focus on particular examples of personal digital memories and context information being logged along the user’s daily life activities. Ivonin et al. argue that the internal experiences of people are important in daily life activities. They evaluate a wearable physiological response-based tool that accurately captures human emotional experiences (positive, neutral, negative, arousal, relaxing). Martin et al. focus on mobile phone-based, automatic, unobtrusive classification of human movements and postures, such as walking at different paces—slow, normal, rush—running, sitting, standing. The types of personal digital memories described in

the papers represent important steps toward providing a more complete life logging archive of past events.

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We hope the issue inspires researchers and practitioners to pursue work in the multidisciplinary area of life logging.

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