

Social Routine Improvement Based on the Expression of Interests

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Abstract

To continue being successful, the Internet needs to be able to support dynamic services, adjusted to the regular citizen's daily routine, and to integrate intermittent connectivity support. In this context, we propose a pervasive sensing framework able to provide contextualization and behavior inference, supported by cooperative sensing and pervasive data sharing, PerSense. PerSense comes with several plugins, and one of them is T-Kiddo, an application developed for Android devices, which captures aspects related to kindergarten and basic schools' children's context, in a non-intrusive way.

Keywords: Small data; routine improvement based on social context; routine estimation and warnings; intermittent connectivity.

1 Introduction

The Internet has been going through a radical transformation to support the needs derived from a society in transformation. From a technological perspective, such needs concern supporting dynamic services, adaptable and useful to the people daily routine. The user becomes the main focus in the way services are created and adapted to satisfy the key societal and economical needs. Such focus has given rise to diversified traces of data concerning the most varied aspects of society, and introduced new requirements both from a service and infrastructure design perspective.

One of the aspects that leveraged this trend is the recent rise of pervasive wireless networks, as well as the availability of low-cost portable devices, such as smartphones, equipped with heterogeneous sensors. Pervasive systems introduce an individual perspective into the paradigm of "big data", assisting the most varied aspects of a social daily routine, ranging from mobile health to transportation. In contrast to the common definition of big data, it is now the

user that can contribute with information, based on adaptable and open sensing software. Thus, more and more, the user dictates the type of data to be captured, introducing more richness into the available urban data sets, and allowing the development of new forms of digital footprints.

This work focuses on the applicability of non-intrusive sensing technology to assist to social routine improvements, based on expressed interests. The scientific and technological aspects concern social isolation and affinity network development over time, by taking advantage of available pervasive technology such as smartphones or embedded devices.

In this work, small data derived from a personal roaming context usage [1, 2] is applied to improve one's social context, to better understand the common and individual social routine, as well as to break social isolation.

Under this trend COPELABS, together with partner Senception is developing software-based solutions able to gather data from both individual and collective sources, and to correlate such data generating information about user behavior and social interaction, based on specific categorizations of context. Such software is currently addressing on-the-fly classification of social contexts in correlation to affinity networks built over time. Such classification allows for roaming habits inference, as well as to trigger alerts when deviations occur.

2 Applicability Scenario

Social routine improvement based on the expression of interests is being lead by Senception in the context of kindergarten/basic school environments. In such context, Figure 1 illustrates a scenario where Bob's parents have acquired a personal cloud platform PerSense, which comes with several plugins, one of them being T-Kiddo.

Bob goes to school everyday and carries T-Kiddo e.g. in his keyring (1). While on the move as well as while waiting for the bus, Bob's T-Kiddo Android application gathers information concerning his physical surroundings and social context and classifies that context in association to other profiles detected. For instance, T-Kiddo infers whether or

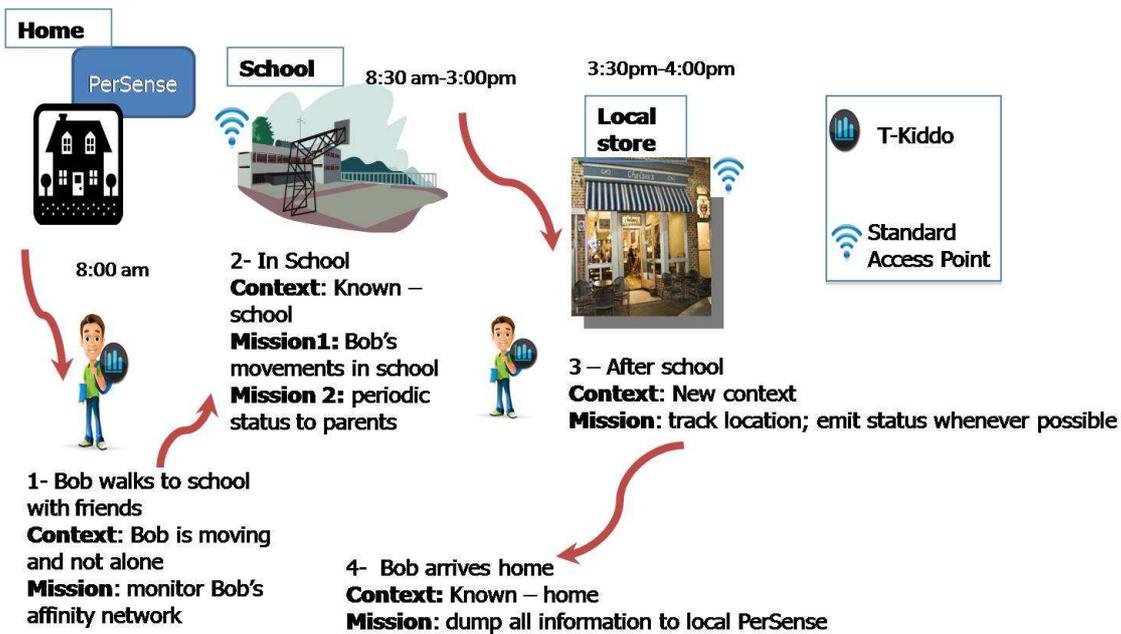


Figure 1: Social routine improvement example applied to basic school children.

not Bob is alone or in a place with a lot of social affinity; type of movement; time spent in different places; potential new location; potential new affinity network.

Once Bob reaches school, T-Kiddo detects this new context and starts monitoring behaviour profiles created by Bob's parents (2). For instance Bob's parents are interested in understanding Bob's movements in school, as well as his anxiety levels when dealing with peers. The data collected by T-Kiddo is periodically transmitted via the school's wireless access points to PerSense located in Bob's home. Bob's parents can therefore visualize Bob's data and context in close to real-time. They can then better address Bob, without becoming intrusive, and assist Bob in gaining better control over his life.

After leaving school, Bob drops off near a market close to his house (3). This is detected as a new context by T-Kiddo. T-Kiddo starts sensing Bob's reaction to the new context, by testing different set of sensors, which will then be associated to the new unknown context. When Bob arrives home (4), T-Kiddo dumps all the daily activity to PerSense. At night Bob's parents realized that Bob was not performing his normal daily routine and that he was in a near coffee shop where he was talking with 3 different persons.

3 Current Status and Available Results

Social routine improvement based on the expression of interests is currently being undertaken by partners Senception and COPELABS, in two projects: Citysense [3] and UMOBILE [4].

In the context of CitySense this work is targeting the development of an Android application (USENSE), where the main purpose is to fight back social isolation, targeting elderly. A first version licensed under GPLv3.0 is expected in

Summer 2015.

In the context of UMOBILE, Senception is contributing to advances in social routine improvement, targeting specifically Kindergarten/basic school children, focusing on children's routine improvement, and alerts concerning deviations from a regular behavior.

References

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