“With a Little Help from My Friends”: Context Aware Help and Guidance Using the Social Network

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Abstract. People are more mobile than ever before. People predominantly need information or help that they can not anticipate and plan for before they begin their journey. There is an abundance of information around us. But the users seek precise and fine–grained information that is not provided by the computing environment but required to carry out their tasks. Especially nomadic users have little choice than to call upon help from other people present in their vicinity. There are social issues (e.g. availability and interruptibility) along with the issues of relevance and reliability to find the most appropriate person to ask for any information or help. Identifying this person is still a challenge today. In this chapter we provide a thorough and grounded discussion of the state of the art of help systems that glean answers from human. We also present the software prototype Ubiquitous–Help–System (UHS) that has been developed to demonstrate how using a social network in combination with the user profile and preferences, can assist a nomadic user. The system assists the nomadic user to find people who can support him in a large scale ubiquitous computing environment.

1 Introduction

In our everyday life we spend a remarkable amount of time searching for some information. The process of finding proper information (e.g. a book, journal, and website) and being able to identify and extract the relevant information requires time and effort [11]. While looking for information we often seek help from the people we know. If we have a specific question from a field in which a friend or colleague is an expert, it is more efficient to consult her or him directly [11, 28, 29]. But, in real–life, most of the questions we have and the type of information we look for, are so diverged that our everyday social network may not be sufficiently large enough to come up with an answer.
Fortunately, there are ways to broadcast our queries to the people who are not necessarily directly acquainted with us. For example, a mailing list or a discussion forum can be a mechanism to broadcast queries and get answers for our questions. Another form of source for relatively practical information is wikis. A mailing list can be used to receive direct responses to a question, albeit a mailing list is usually limited within a small community sharing a particular background. An online forum can offer a greater scope where the users can pose questions and get answers from other knowledgeable users. It can also serve as a repository of old questions and answers. Since the questions and answers are usually public, forums act as a discussion board as well as a source of knowledge gathering. Wikis also serve as knowledge repository, the only difference from the traditional web is that the wikis are usually the users generated repository of collective intelligence. Broadcasting messages is good for technical questions that can be answered in one step with a single answer or with multiple plausible answers. This works efficiently, mostly for technical questions where a question is well defined, and have a straight answer.

There are abundance of information everywhere around us. But finding the right piece of required information in time is a challenging task. Furthermore, it is more difficult for persons on the go to find the relevant and reliable piece of information. Mobile people have less time to verify an information before accepting it. Context awareness can help the users to extract right information relatively easily. With the increased amount of available information, context awareness and social awareness can serve as a filtering mechanism. Awareness of context and activity provides ubiquitous computing environment with the ability to adapt its services in order to best meet its users’ expectations by extracting the users’ need from the context. Here context is defined as any information that can be used to characterize the situation of an entity whereas an entity is a person, place or object that is considered relevant to the interaction between a user and an application, including the user and applications themselves.

Users activity and context are interwoven characteristics that give meaning to any natural form of communication or interaction. Despite the fact these are interwoven characteristics, both context awareness and activity awareness are often considered separated from each other.

With the advancement of modern mobile technology, computing devices are becoming ubiquitous, surrounding us virtually all the time. These devices give computational power and communication capabilities that we can exploit in our daily life activity. For example, Web searching has become the preferred way of looking for information to support various tasks (e.g., looking for a nearby pizzeria, checking the train schedule, etc.). Web search is still the most dominant form of searching and accessing information.

But people are more frequently connected when mobile than ever before. Mobile people are exposed to newer situations where they need more contextual information (e.g., a tourist may need help and direction from his current