Chapter 11
ChronoFindMe: Social Networks’ Location-Based Services

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ABSTRACT

Social networks such as Facebook have grown exponentially over the past decade. This growth led to the exploration of new services that could enhance users’ experiences and constitute a driver for even more followers. With the proliferation of smartphones and the increasing search for applications that enable the sharing of experiences, social networks became eager to integrate into mobile devices, taking advantage of their impressive omnipresence and array of sensors. Amongst the sensors, the most notable are the localization sensors (GPS) that allow for the development of location-based services that use the geographical position to enrich user experiences in a variety of contexts, including location-based searching and location-based mobile interaction. ChronoFindMe enhances location-based services by adding a temporal component not present in current approaches. The authors allow information about past and future locations to be considered by defining an architecture that provides location-based services to users of social networks. This information includes data about time and space, which can be accessed through the social network or a specific mobile application, using privacy policies to assure users’ privacy.

INTRODUCTION

The appearance of Web 2.0 provided new ways of social interaction, namely through Social Networks, such as Facebook or Google+. Nowadays, there are many social networks with various available services that are also available for mobile devices, changing and improving how people interact. The inclusion of location-information has been contributing to these social changes (Chang et al., 2007). In this work, we discuss the deployment of location-based services that allow users to...
access location dependent information. The main goal of the proposed work is the inclusion of a temporal component into a set of location-based services, so that a user may know past and future locations of other social network users whenever they make that information available.

A social network can be defined as a Web-based service that allows individuals to construct a public or semi-public profile within a bounded system, articulate a list of other users with whom they share a connection, and view and traverse their list of connections and those made by others within the system (Boyd & Ellison, 2007). Social networks attract millions of people around the world, aggregating them based on commonalities such as language, race, sex, religion, nationality or geographic location. Examples of existing social networks include: Facebook, Orkut, Foursquare, hi5, MySpace, YouTube, Twitter and LinkedIn. Facebook is commonly accepted as the most used worldwide (Cosenza, 2011; Liu et al., 2010; He et al., 2011). Apart from personal information, comments and private messages between users, social networks allow sharing other types of information, among which, location. There are currently some applications in a few generic social networks, which allow its members to access the location of other users. For instance, Facebook provides Locaccino and Friends on Fire, and Orkut offers Nanonavi and LiveContacts.

Rapleaf conducted a study, covering 49.3 million people, which focuses on the age and gender of social network users. This study covered people who are at least on one social network and have public information about the age (RapLeaf, 2008).

In Figure 1 it is shown that, contrary to expectations, female users are the majority on social networks. The female presence is stronger in the ages between 14 to 34 years, but from the age of 35 years up, the number of male users is slightly higher. In general, as depicted in Figure 2, users use social networks to stay connected to family and close friends and perhaps this is why most of social networks users have between 2 and 25 friends.

Social networks are used by individuals in their personal life, but also by institutions seeking to publicize their work. The nonprofit Social

**Figure 1. Participation in social networks by age and gender (adapted from RapLeaf, 2008)**