A Survey on Location Aware and Context Aware In Mobile Applications

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Abstract: Mobile services and applications are used in changing contexts and surroundings. These services are made up of context-aware and offer contextually relevant information to the user. These facilities help to find the data and its use.

Keywords- context-aware, location-aware, mobile computing, middleware.

I. INTRODUCTION

Mobile computing refers to the use of any kind of computer in a moving environment. The motion may be of the device itself, as in laptops, palmtops, wearable computers, and mobile phones; or it may refer to the dynamics of the computing process, as in digital cameras, podcasters and MP3 players. It is more and more clear that wireless communications will be the natural form of communication among people, living beings and things. Virtually every appliance will be equipped with a small, cheap, lightweight wireless interface and the possibility of communicating anytime, from anywhere, to anybody/thing, in the world and beyond, is imminent. Mobile computing can be broadly classified into two categories: Portable computing and mobility computing.

Portable computing actually refers to wired communication. Portable devices themselves are movable, but in order to access them one needs to connect them to a network port. Mobility computing is also called simply mobile computing nowadays. This is true wireless communication. Not only are the devices movable, but they can also be accessed from almost anywhere. Today, portable computing is almost on the verge of extinction, mobile computing has made its foray into almost every aspect of human life.

Mobile applications can significantly increase the productivity of workers, especially if the workers can access enterprise applications in a timely and efficient manner using their mobile wireless devices. Organizations have embraced wireless e-mail, thanks to effective options that are available today for small form-factor devices. Now many organizations are working to make other data equally available. Mobile middleware platforms provide one means of achieving this objective, offering capabilities and functions that can simplify overall application deployment. Because there are many different types of mobile middleware, this paper seeks to explain how these platforms function, what their characteristics are, and how organizations can select the most appropriate solutions. Middleware is computer software that connects software components or applications, enabling services to interact over a network. The purpose of middleware is to facilitate client/server operations, access to host applications, and to enable complex distributed systems.

Context awareness is defined complementary to location awareness. Whereas location may serve as a determinant for resident processes, context may be applied more flexibly with mobile computing with any moving entities, especially with bearers of smart communicators. Context awareness originated as a term from ubiquitous computing or as so-called pervasive computing which sought to deal with linking changes in the environment with computer systems, which are otherwise static. Although it originated as a computer science term, it has also been applied to business theory in relation to business process management issues.

Location awareness: location awareness is a component of presence technology that delivers information about a device’s physical location to another user or application. The term is most often used in reference to mobile communication devices and cameras but it can also refer to websites that request a user’s zip code to deliver targeted information.

II. LOCATION AND CONTEXT-AWARE SYSTEMS

One challenge of mobile location computing is to exploit the changing environment with a new class of applications that are aware of the context in which they are run. Such context-aware software adapts according to the location of use, the collection of nearby people, hosts, and accessible devices, as well as to changes to such things over time. A system with these capabilities can examine the computing environment and react to changes to the environment.

Location is a crucial component of context, and much research in the past decade has focused on location-sensing technologies, location-aware application support, and location-based applications. With numerous factors driving deployments of sensing technologies, location-aware computing may soon become a part of everyday life. A central...
problem in location-aware computing is the determination of physical location. Researchers in academia and industry have created numerous location-sensing systems that differ with respect to accuracy, coverage, frequency of location updates, and cost of installation and maintenance.

III. PROTOCOLS FOR MOBILE COMPUTING APPLICATIONS

Mobile computing systems present challenges for message routing, support for disconnected operation, and providing quality of service guarantees related to latency, bandwidth and jitter. While multiple approaches have been developed, existing systems typically support only a small set of solutions in each area. In this part, a collection of communication protocols that supports multiple solutions within a single integrated framework. These protocols are constructed by subdividing the required functionality into orthogonal functions and then implementing variants of these functions as fine-grain software modules called micro-protocols. A custom service is then realized by choosing micro-protocols based on functionality and configuring them together with a standard runtime system that implements an event-oriented execution model.

a) Middleware Support in context aware.

Context-aware applications need support for acquisition and delivering of contextual data. There are several ways that have been proposed. Some are general ways to handle any form of contextual data. However, since location information is the most widely used contextual information, many approaches have been developed for providing location context. There are some issues common across any kind of contextual information acquisition and delivering infrastructure.

b) Context-Aware mobile and its Applications

Context-aware computing devices and applications respond to their changing environment in an intelligent manner so as to enhance the computing environment for the user [Pascoe 1997]. Context-aware applications tend to be mobile applications for obvious reasons: 1) the user's context changes most frequently when user is mobile and 2) the need for context-aware behavior is greatest in a mobile environment. Context-aware applications should minimally be proactive in acquiring contextual information and adapt their response based on the acquired information. The response itself can be proactive (automatically initiated be the system or application) or reactive (in response to the user’s request). A context-aware application can perform various tasks which may include context-aware user interface and presentation of contextual and other information, context-sensitive information service, context-aware adaptation of behavior either proactively (such as automatic reconfiguration) or reactively (such as context-sensitive querying).

Employing context-awareness is not limited to mobile devices but it has been proposed or demonstrated in various different kinds of applications, for instance automated video and audio capture in a lecture room, examination is limited to the mobile context-aware applications, which are looked at more closely in this section.

Location is probably the most commonly used variable in context recognition, and it brings easily identified potential use cases. Location information has been used both as one contextual information source among others, and as the only context attribute, although the commonly agreed current understanding is that one should not limit context to location only (Schmidt et al. 1999). However, location-awareness forms a significant area among mobile context-awareness research, and has great potential for future commercial applications.

Location-aware messaging relates inevitably to mobile communication devices. Egraffiti introduces an on-campus location-aware messaging application where users can create and access location-associated notes, and where the system employs laptop computers and wireless network-based location detection.

Info Radar supports public and group messaging as a PDA application, where the user interface displays location-based messages in a radar-type view showing their orientation and distance from the user (Rantanen et al. 2004). The widespread use of mobile phones also enables extending the experiments to large audiences, as no specific gadgets need to be distributed. There exist several mobile applications utilizing presence. For example, Blue Reminder is a mobile phone application, where a Bluetooth-triggered reminder related to another person goes off when it detects the proximity of the corresponding person’s Bluetooth phone (Osbakk & Rydgren 2005). Poypurev et al. have prototyped a concept for spotting the presence of people that are buying and selling items that are in the interest of the user.

The idea is demonstrated also in a mobile phone application by Bardram and Hansen (2004), who seek to increase social awareness and minimize interruptions by
exploiting availability information. Different sensors and their combinations have been used in a number of projects concerning context-aware mobile devices. Hinckley et al. (2005) use touch sensor to detect when the device is held in hand to turn the power on. Schmidt (2000) demonstrates a similar feature, and adapts the UI by increasing text fonts if device is shaking, e.g. while walking. In addition, screen layout orientation, backlight, ringing tone and volume adaptation have been proposed (Gellersen et al. 2002, Hinckley et al. 2000, Mäntyjärvi et al. 2003, Schmidt & Gellersen 2001).

IV. CONCLUSION

This paper mainly presents the location aware as well as context aware in the mobile application. The combination of these systems will help the better results in handling the mobile devices.

REFERENCES


