Social networking meets ambient intelligence (w/ Video)

November 4 2009

(PhysOrg.com) -- Sharing small snippets of information about your daily life is a key feature of the online social networking revolution. Soon status updates and other social information could be generated automatically.

A team of European researchers are working on merging the instant sharing of social information, popularised by networking and messaging platforms, such as Facebook and Twitter, with emerging ambient intelligence systems that use sensors and smart objects to create awareness of users' whereabouts and activities. Combined, the two technologies promise to provide pervasive awareness, a powerful new way to stay in touch with friends and relatives, whether they live down the street or on the other side of the globe.

"The theory we developed as the basis for our work is that social connections between people are enhanced by both the number and the quality of the interactions between them. Pervasive awareness systems can support and improve this social communication," explains Achilles Kameas, a senior researcher at the Research Academic Computer Technology Institute (raCTI) of Patras, Greece.

Kameas coordinated the EU-funded ASTRA project, which brought together researchers from multiple disciplines, including psychology, interaction design, knowledge engineering and computer science, to take social networking to the next level.

In touch with friends and family, automatically?

Users of a social networking platform based on the ASTRA approach, for example, would rarely have to post status updates manually to let their family know what they are doing or where they are. Surrounded by smart objects and sensors in their home or office, the system continually updates their status information, automatically telling friends that they are unavailable to receive a phone call while they are busy cooking or that they do not want to be disturbed during a business meeting.

"Not only is this information generated automatically, depending on the criteria set by each user, but it does not have to be displayed on a computer screen or in any other distracting way," Kameas explains. "In a smart home or office environment the system could let users know if someone is available for a phone call or not simply by changing the colour of the frame of a photo of them."

The researchers developed their approach based on the so-called focus-nimbus model to determine what information is shared and what is received by different people in a social network. In this context, a person's nimbus consists of the type, amount and detail of information they want to share with others, while their focus contains the type and amount of information they choose to receive from others, including their reaction to the person's nimbus.

The ASTRA software architecture allows both criteria to be defined through a rule-based system that governs what information is shared, in what way and with whom. A husband and wife, for example, may each want to know when the other gets home, but a mother may only want to be informed when her daughter returns, not the reverse.

User-defined applications

Different applications, defined by each user or community of users, allow for a wide variety of scenarios, from simple event alerts, to supporting more complex, community-wide situations. According to Kameas, creating such apps is a relatively straightforward process, particularly for tech-savvy young people who are accustomed to modifying and adding features to their MySpace or Facebook pages. However, the researchers are currently working on a new interface to make the process even easier.

Consumer electronics manufacturer Phillips and mobile operator Telenor have conducted trials of the ASTRA technology, with Phillips testing it in its prototype HomeLab smart home.

The response of test users, Kameas says, has been generally positive, although many have raised concerns about privacy and security issues. In that regard, the ASTRA coordinator notes that the system is similar to Facebook and other online services in that users can choose how much information they share and with whom.

"It's like a window. You can leave it wide open, pull the curtain, or close the blinds. Then, what you choose to put on display in the window, be it content or an activity, can be seen by others," Kameas notes.

To meet user concerns, the researchers are planning to launch a follow-up initiative for adaptive pervasive awareness systems based on the notion of a trustworthy personal "bubble" that ensures privacy. At the same time, they are developing ASTRA-based applications for existing social networking platforms.

More information: ASTRA project