Social Networking App, Instant Messaging (IM), Presence Application for SmartPhones

CenceMe is the first presence application available for smartphones. It functions as enhanced instant messaging (IM) and a real-time social networking app using sensors already embedded in smartphones.

The app's enriched sensing presence is an enhancement over the text-driven forms of presence information used with IM. CenceMe automatically collects data about a user's activity, location, and local weather. The application uses the embedded accelerometer in a user's smartphone to discern the user's physical activity (sitting, walking, running). CenceMe can tell the user's social interaction (whether or not they are having a conversation or are in a quiet or noisy place) by using the embedded microphone. The phone’s embedded barometer and temperature sensors capture the weather at the user's location. A CenceMe user can then share all this data with friends, giving a richer picture of their day than a simple text.

Users can share their presence data with friends at the CenceMe website (www.cenceme.org) and through the social networking sites, Facebook, MySpace, and Twitter. Users can accompany their presence posts with status/mood icons, photos, and personalized messages. They can also invite friends to join CenceMe via email and short message service (SMS). Users have control over what information is shared and at which sites.

To support the CenceMe application, Dartmouth computer scientists have built a number of CenceMe widgets for Facebook and a web portal that offers a broader and deeper user experience than the widgets alone. For cell phones without the suite of sensors found on smartphones (e.g., accelerometers), scientists developed a prototype CenceMe key ring attachment which provides the CenceMe daemon on the phone, Bluetooth access to GPS, and a 3-axis accelerometer.

Presence Application Tested Through Apple App Store

The system runs on any Symbian-based cell phones that include java virtual machine (JVM) support (e.g., iPhone, iPod Touch, Nokia N95, N80). The software architecture of the sensing daemon is split into modules written in C++ and Java to maintain portability where possible, while addressing limitations of the JVM system application programming interfaces (APIs). Fact bundles are pushed to the backend servers via XML-remote procedure call (XML-RPC) calls over either WiFi or general packet radio service (GPRS). Backend servers offer a web-service-based API to external systems.

Dartmouth scientists tested the presence application by making it available free through the Apple App Store to thousands of users. CenceMe users gave feedback via a dedicated customer support email channel and a CenceMe discussion board. Customer responses allowed researchers to identify and remedy issues with the application.

The next step for the CenceMe system involves expanding its current focus on consumer-driven social networking, and applying CenceMe technology to public health initiatives (BeWell), domain-specific sensing
(WalkSafe), and hands-free, neural-impulse driven computing (NeuralPhone). CenceMe and other applications like it are also excellent vehicles to carry out global scale research.

**Applications**

- Enhanced instant messaging
- Real-time, mobile social networking
- Mobile diary for its user
- Can be expanded to include other applications that impact public health, safety, and machine learning
- Can be used to conduct global scale research with thousands of participants

**Advantages**

- Uses sensing technology already embedded in smartphones
- Expands on the use of instant messaging and social networking sites as a means of social connection
- Adds a personal, real-time element to local searching and mobile social nets

**Inventors**

*Andrew Campbell, Professor of computer science*

Mr. Campbell heads the Smartphone Sensing Group at Dartmouth. His research is currently focused on turning smartphones into cognitive phones by pushing intelligence to the phone to teach it to make inferences about people’s behavior, environment, and lifestyles. Before joining Dartmouth’s computer science department, he was a tenured professor of electrical engineering at Columbia University. Prior to that, Mr. Campbell spent ten years in the software industry working on the development of operating systems and wireless networks.