



Context-Aware Computing Architecture and Software Platform

Design and development of a scalable architecture to support mobile context-aware computing

Contact

Luke Diorio
TreMonti Consulting, LLC
9302 Lee Highway
Suite 306
Fairfax, VA 22031
Phone: 703-865-5210
ldiorio@tremonticonsulting.com

Inventor

Legend L. Burge, III, PhD

Field

Mobile and Computer Software

Technology

Mobile context-aware computing

Key Features

- Location-based services
- Context-driven on-demand platform
- Rich users experience

Stage of Development

Prototype has been developed.

Status

Seeking development & licensing partner.

Patent Status

Patent pending

Technology

Howard University's new technology seeks to provide a platform for building media rich context aware mobile applications that can withstand intermittent wireless connectivity. Context aware systems are able to adapt their operations to the current context without explicit user intervention. The technology allows for the delivery of specific messages to the user's device, based on the exact location of that user/device. A specific application of this computer/software system is the mobile advertising and services industries. This can be of use in the travel/tourist industry, museums, amusement parks, universities, libraries, retail stores, zoo/wildlife parks and shopping malls. Other potential applications include asset tracking/real time locating systems, supply-chain management, health and education.

Benefits of the Technology

The platform enables location-based services, as well as traditional time-aware, user-aware and device-aware services. The platform links users and services seamlessly on-demand and based on location while the user navigates their environment. Unlike the current mobile devices (i.e. mobile phones, PDAs, laptops, GPS devices), a mobile device with multiple sensing capabilities for geo-spatial positioning can fully exploit the software platform providing a rich interactive experience to its users.

Potential Application for Technology

The location-aware computing platform is targeted to the mobile advertising and services industries that could provide more immersive experiences to its customers utilizing technology that provides seamless mobility (i.e. travel/tourists industry, museums, amusement parks, universities, libraries, retail stores, zoos/wildlife parks, and shopping malls). In addition, other potential target markets for application include: asset tracking, supply-chain management, health, and education. Currently, limited content and services can be accessible from current devices (GPS enabled mobile phones, tablet PCs, and PDAs). With the development of future mobile devices the platform can be fully exploited providing a rich experience to end users.

Stage of development

The researcher has developed a prototype of a software platform that uses a PDA integrated with several third party commercial off the shelf sensing devices (GPS, compass, RFID readers). The prototype project was named CLICKMAN, and was a campus wide mobile tour guide. The prototype system embedded content on the local system, in order to minimize latency

inherent with extensive updates from a remote server.

Pathway to technology being ready for licensing and/or product

The researcher states several areas of current and future work, to include:

1. Build a mobile device that integrates several sensing capabilities, to include dead reckoning hybrid GPS, compass and RFID.
2. Implementing security features for user privacy, hardware, messaging and device provisioning.
3. Exploration of ontology-based approaches to address user context.
4. Investigate use of Java, to gain platform independence.

Opportunity

Howard University is looking for a commercial partner to further develop this system.

INVENTOR

Legand L. Burge, III, Ph.D.
*Associate Professor and Interim Chair
Department of Systems and Computer Science
Howard University*

EDUCATION

*B.S. Computer Information Science/Mathematics, Langston University
1992
M.S. Computer Science, Oklahoma State University 1995
Ph.D. Computer Science, Oklahoma State University 1998*

SPECIALTY

Dr. Burge's research interests lie in the field of distributed computing. The primary thrust of his current research is in global resource management in large-scale distributed systems.

In particular, he is interested in middleware technology to support scalable infrastructures for pervasive environments capable of servicing a very large number of small (possibly mobile) distributed and embedded devices efficiently.

He is also interested in the application of distributed high performance computing to solve computational science problems in Biology, Physics, and Chemistry. Dr. Burge is currently the director of the Distributed Systems Research Group (DSRG) and associate director of the Center for Applied High Performance Computing at Howard University. Dr. Burge is also interested in Computer Science Education and Diversity and Technology Transfer.