

Department of Electrical and Computer Engineering

***Distinguished Lecture Series***  
***2007-2008***

**Wednesday, February 13, 2008**  
**11:00 a.m. ~ CoRE Building Lecture Hall**

**LOCATION PRIVACY IN LOCATION-AWARE COMPUTING**

**Dr. Ling Liu**

*Associate Professor, College of Computing*  
*Georgia Institute of Technology*

**Abstract**

We are entering the mobile Internet era where people, vehicles, and hand-held devices are connected at all times. Location-aware computing represents an emerging service platform for many applications where location is one of the critical computing element for real time information access and sharing, on-demand service discovery and delivery, and continuous and personalized service provision. Location privacy has attracted attention in location-aware computing and communication research over the past few years. Most of the location privacy solutions try to prevent disclosure of unauthorized location information by techniques that explicitly or implicitly control what and how location information is given to whom and when. These techniques can be classified into three categories: (1) Location protection through user-defined or system-supplied privacy policies; (2) Location protection through location anonymization, a system capability to obfuscate the location information such that a state of a subject is not identifiable within the anonymity set; and (3) Location protection through pseudonymity of user identities, which uses an internal pseudonym rather than the user's actual identity. In this seminar, I will give an overview of location privacy research, focusing on essential concepts, alternative models and techniques for anonymous usage of locations. The discussion will address a number of important issues in location privacy research, including how to model location privacy requirements of mobile users, how to find a balance between user's desired level of location privacy and the loss of location utility or the quality of service provided by LBSSs, how to combine policy-based location privacy mechanisms with location anonymization techniques to enable users to tailor the system-level privacy protection strategies to meet their personal privacy preferences. In order to guarantee anonymous usage of location services, a strong guarantee is required such that the precise location information transmitted by a user cannot be easily used to re-identify the subject. We argue for the need of better understanding of location inference attacks and the need for better quantitative measures of location privacy requirements beyond location  $k$ -anonymity. I will end the talk with a list of open issues and technical challenges in location privacy research.

**Biography**

Ling Liu is an Associate Professor in the College of Computing at Georgia Institute of Technology. She directs the research programs in Distributed Data Intensive Systems Lab (DiSL), examining performance, security, privacy, and data management issues in building large scale data intensive systems. Dr. Liu and the DiSL research lab have been working on various aspects of distributed data intensive systems, ranging from decentralized overlay networks, mobile computing and location based services, sensor network and event stream processing, to service oriented computing architectures. She has published over 200 international journal and conference articles in the areas of distributed systems, Internet computing systems, Internet data management, and information security. Her research group has produced a number of open source software systems, among which the most popular ones are WbcQ, XWRAPElite, Apoiada, PeerCrawl. Dr. Liu has received distinguished service awards from both IEEE and ACM and has played key leadership roles on program, steering, and organizing committees for several IEEE conferences, including IEEE International Conference on Data Engineering (ICDE), IEEE International Conference on Distributed Computing (ICDCS). She is currently on the editorial board of several international journals, including IEEE Transactions on Knowledge and Data Engineering, International Journal of Very Large Database systems (VLDBJ), International Journal of Web Services Research, International Journal of Wireless Networks (WINET), and Springer International Journal on Peer to Peer Network and applications. Dr. Liu is a recipient of the best paper award of WWW 2004, the best paper award of IEEE ICDCS 2003, and the 2005 Pat Goldberg Memorial Best Paper Award. She is also a recipient of IBM faculty award in 2003, 2006. Dr. Liu's research is primarily sponsored by NSF, DARPA, DoE, and IBM.

***This lecture is part of the Department of Electrical and Computer Engineering Distinguished Lecture Series.  
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Refreshments will be served at 10:30 a.m.