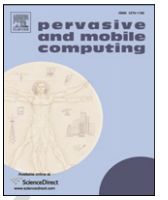
ARTICLE IN PRESS

Pervasive and Mobile Computing xx (xxxx) xxx–xxx

Contents lists available at ScienceDirect

Pervasive and Mobile Computing

journal homepage: www.elsevier.com/locate/pmc



Editorial

PerCom 2008 special issue

It gives us a great pleasure to present you this special issue that contains the extended versions of selected papers presented at the *Sixth Annual IEEE International Conference on Pervasive Computing and Communications* (PerCom 2008) that was held in Hong Kong, China, March 17–21, 2008. PerCom is a high-quality conference covering a broad spectrum of issues in pervasive computing and communications: from underlying technologies to applications and services.

PerCom 2008 received 160 submissions, and following a thorough review process the program committee selected 19 regular papers and 6 concise papers, and 10 papers for poster presentation at the conference. Among the 19 regular papers, we selected 7 papers and invited the authors of these papers to submit an extended version of their conference paper for possible publication in the special issue.

After an additional in-depth review process, we selected the seven papers contained in this special issue, all of which provide excellent contributions to various aspects of the pervasive computing and communications research: security, privacy, indoor localization, software adaptation, RFID systems, context search for home entertainment and data querying in pervasive computing systems.

In the first paper, "Structured Decomposition of Adaptive Application", Justin Mazzola Paluska, Hubert Pham, Umar Saif, Grace Chau, Chris Terman and Steve Ward describe an approach to automate certain high-level implementation decisions in a pervasive application. The decisions may be postponed until run time, enabling adaptive applications. In the approach, an application programmer can specify the behavior of an adaptive application as a set of open-ended decision points. Decisions points are formalized as Goals, which may be satisfied by scripts called Techniques. The system provides a framework in which Techniques may compete and interoperate at runtime in order to maintain an adaptive application. The paper presents description of some applications that have been used to test the general applicability of Goals and Techniques.

In the second paper, "A Tamper-Proof and Lightweight Authentication Scheme", Ghaith Hammouri, Erdinç Öztürk, and Berk Sunar present a challenge response scheme that is based on 2-level noisy Physically Unclonable Functions (PUF). The authors show that the scheme is secure against passive attacks provided that it is difficult to learn a threshold of halfspaces under the uniform distribution.

"Shadow Attacks on Users' Anonymity in Pervasive Computing Environments", by Daniele Riboni, Linda Pareschi and Claudio Bettini is the third paper of the special issue. It considers attacks on privacy in mobile and pervasive computing systems and proposes a defense to a type of attack on the notion of k-anonymity, called shadow attacks. K-anonymity is the situation when an issuer of a request cannot be distinguished in a group of at least k potential issuers. The paper defines a shadow attack and proposes a defense, for which its correctness is analyzed.

In the fourth paper, "An Effective Location Fingerprint Model for Wireless Indoor Localization", Nattapong Swangmuang and Prashant Krishnamurthy presents a new analytical model for predicting precision and accuracy for an indoor positioning system. Location fingerprinting is a technique that connects location-dependent characteristics, such as received signal strength (RSS) from known access points to a location and uses these characteristics to infer the location. The model applies proximity graphs for approximating the probability of error distance given a fingerprint database using WLANs received signals and its associated statistics. The analysis of the fingerprint structure can be used to modify inefficient location fingerprints within a database.

In the fifth paper, "Data Quality and Query Cost in Pervasive Sensing Systems", David Yates, Erich Nahum, James Kurose and Prashant Shenoy examine the costs and benefits of caching data in a wireless sensor system server. The paper shows that for applications that are driven by delay, policies that emulate a cache hit by computing and returning approximate values of a sensor data provide quality improvement and cost savings. In contrast, when data accuracy drives data quality, then a tradeoff between data quality and query costs occurs. The paper measures the benefit and costs of seven different caching and lookup policies as a function of application quality requirements. The paper shows the manner of the tradeoff between costs and quality, and shows a class of policies for which the query rate can be bounded when servicing an arbitrary workload of user queries.

1574-1192/$ – see front matter © 2008 Published by Elsevier B.V.
doi:10.1016/j.pmcj.2008.09.004

In the paper "SeeNSearch: A Context Directed Search Facilitator for Home Entertainment Devices", Alan Messer, Anugeetha Kunjithapatham, Phuong Nguyen, Priyang Rathod, Mithun Sheshagiri, Doreen Cheng and Simon Gibbs describe technologies for helping users find Internet content related to their TV viewing, while are viewing the TV program. The goal is to enable access to Internet content without disrupting the TV viewing experience. The paper addresses the problem of using a search engine on a TV and simultaneously considering that TV viewing is a multi-user activity. The authors present a prototype and conducted its evaluation.

The final paper of the special issue, "A Cross-Layer Framework for Privacy Enhancement in RFID Systems", Tong-Lee Lim, Tieyan Li and Sze-Ling Yeo describe a framework built upon mechanisms in the physical and MAC layer to prevent adversaries and malicious parties from tracking RFID tags through the monitoring of their identifiers. The objective is to allow low-cost RFID tags to be read by authorized readers without allowing unauthorized parties to identify or track the tags.

In conclusion, we would like to thank the journal's editor-in-chief for special issues, Prof. Behrooz A. Shirazi, for his guidance and assistance through the whole process. We would like to extend special thanks to all authors for their outstanding contributions. Last but not least, we would like to thank all our colleagues who volunteered plenty of their precious time and energy for their valuable, insightful and timely feedback during the review process that helped make this special issue a reality.

We have really enjoyed this experience, and we hope that you will find this issue informative and useful!

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