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Editorial: Special Issue on "Advances in Mobile IPv6 and Network-Based Localized Mobility Management"

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Wireless mobile communications are rapidly becoming indispensable components of our life with the widespread use of portable devices. Mobile IPv6 (MIPv6) has been recognized as a standard protocol that handles the mobility management and provides the seamless mobile communications. Moreover, it is expected that MIPv6 will open the Mobile Internet Age where uses can get online anywhere, anytime regardless on their movements. Despite such a potential, MIPv6 suffers from some problems such as long handover latency and high signaling overhead. As a result, novel approaches such as Fast-Handovers for MIPv6 (FMIPv6) and Hierarchical MIPv6 (HMIPv6) have been proposed. Recently, Proxy MIPv6 (PMIPv6) has gained significant attention due to its network-based localized mobility management (NETLMM), which allows mobile devices not to be involved in mobility management.

The objective of this special issue is to bring together the researchers from academia and industry as well as practitioners to discuss the latest research advances in the area of MIPv6 and NETLMM.

This special issue is composed of total eleven papers, some of which are extended from the outstanding papers presented at the 2nd International Workshop on Mobile IPv6 and Network-based Localized Mobility Management (MobiWorld 2010).

They cover the recent technologies for wireless mobile communications.

The issue starts with four papers addressing Proxy Mobile IPv6 (PMIPv6), which is a recent approach for IP mobility management. The paper "Enhancing QoS of Mobile Devices by a New Handover Process in PMIPv6 Networks" introduces a new handover process to further improve the handover performance of PMIPv6, while providing detailed numerical analysis in terms of handover latency, packet loss, and buffering cost. The paper "IP Flow Mobility in PMIPv6 Based Networks: Solution Design and Experimental Evaluation"

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introduces an extension to PMIPv6 to support IP flow mobility. Authors also provide experimental evaluation results conducted with a mobile device equipped WLAN and 3G interfaces that validate the proposed IP flow mobility. The next paper "A Secure Relay-Assisted Handover Protocol for Proxy Mobile IPv6 in 3GPP LTE Systems" proposes a handover improvement mechanism of PMIPv6 in 3GPP LTE networks. In this paper, authors propose to utilize a relay agent connecting different access networks to improve the inter-access network handover performance while providing secure network access. The paper "The Performance Analysis of the Multicast Extension Support for Proxy MIPv6" proposes two different approaches for multicast support in PMIPv6 such as the LMA-based multicast method and the MAG-based multicast method and provides comparative performance analysis on the proposed approaches compared with existing ones.

The next two papers present advanced research results on Network Mobility (NEMO). The paper "Performance Analysis of Prefix Delegation-Based Route Optimization Schemes: Effects of increasing the Number of Nodes" analyzes prefix delegation schemes in NEMO route optimization environment. Another paper "Analysis of Session Handoff Probability in NEMO-based Vehicular Networks" provides analysis results for the session handoff probabilities for riding and taking off users and show the effects of the cell residence time, the numbers of road segments/intersections, the velocity, and the signal delay.

In the paper "Mobile IP-based Protocol for Wireless Personal Area Networks in Critical Environments", authors introduce a possible approach that provides mobility support in wireless personal area networks.

The paper "Optimized Access Network Selection in a Combined WLAN/LTE Environment" proposes an access network selection scheme considering not only parameters available from a mobile device but also considering network level parameters. Simulation studies are also conducted to validate the proposed scheme.

The paper "ID/Locator Split-based Mobility Scheme for Heterogeneous New Generation Network" introduces an ID/Locator separation network architecture wherein IDs are used in the application and transport layers to identity communication sessions and locators are used in the network layer to find the location of communication nodes. In the paper, authors provide an example of mobility across heterogeneous edge networks.

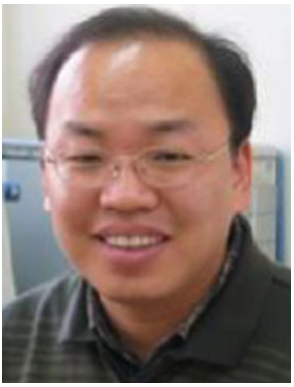
The paper "Design of Dead-End-Avoidance Method for Geographic Forwarding in MANET" proposes a scheme designed to avoid the dead end problem in geographic routing. The proposed scheme is based on the A star algorithm and proposed simulation results confirm its possible use in geographic routing.

The paper "A Privacy-Preserving Location Assurance Protocol for Location-Aware Services in VANETs" introduces a privacy-preserving location assurance protocol that avoids illegal movement tracking of vehicles in a location-aware service. The protocol relies on a hierarchical identity-based signature scheme to generate a signature for providing location assurance and utilizes anonymous authentication for privacy preservation.

We would like to extend special thanks to all authors as well as reviewers for their enthusiasm and dedication, which have made this issue a reality. We also would like thank Professor Ramjee Prasad, Editor-in-Chief of Wireless Personal Communications, for giving this valuable opportunity to us.

Finally, we hope this special issue will serve as a reference point to those readers who are interested in advanced wireless mobile communications.

Author Biographies



Ilsun You received his M.S. and Ph.D. degrees in Computer Science from Dankook University, Seoul, Korea in 1997 and 2002, respectively. Since March 2005, he has been an Assistant Professor in the School of Information Science at the Korean Bible University, South Korea. Prof. You served or is currently serving on the organizing or program committees of international conferences and workshops including CISIS'10-12, IMIS'07-12, MIST'09-11, MobiWorld'08-12, and so forth. Also, he has served as a guest editor for more than 10 international journals. Also, he has worked as an Editor-in-Chief for Journal of Wireless Mobile Networks, Ubiquitous Computing, and Dependable Applications (JoWUA) and Journal of Internet Services and Information Security (JISIS) while serving on the editorial boards of International Journal of Ad Hoc and Ubiquitous Computing (IJAHUC), Computing and Informatics (CAI), and International Journal of Space-Based and Situated Computing (IJSSC). His main research interests include mobile Internet security and formal security verification.

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