



Guest Editors' Introduction

With information access becoming part of everyday life, mobile computing environments are increasingly essential to cater to the needs of mobile users. Present-day information access invariably involves multimedia data in some form or other. Hence, there is a need for mobile multimedia networks with protocol features that can handle widespread mobility of the clients as well as the fluctuating network characteristics. Multimedia systems, in general, need guarantees on the network bandwidth, packet delay, packet delay jitter, and packet loss probability. These guarantees are offered in the form of Quality of Service (QoS) by the network service provider to the multimedia systems. Mobile communication systems might have to dynamically re-route set of multimedia information flows associated with a mobile client, from one base station to another in a timely manner, without significant interruption and change in the QoS.

Also, there is a need for identifying the QoS requirements of multimedia systems and for analyzing how these requirements may be mapped onto the mobile networking environments. QoS availability in mobile environments can fluctuate quite rapidly and hence, multimedia systems have to become adaptive or scalable, with respect to the fluctuating network environments. Apart from the mobility of the computing device, users can also be mobile *without* using a wireless laptop or a mobile phone. Such mobile users login to different systems at different points in time and expect the same computing environment.

This special issue focuses on the issues concerning mobile networking environments for multimedia systems. The first paper by Rama Subramaniam and Siva Ram Murthy describes the problem of providing seamless QoS to multimedia systems. Their approach is to use the application QoS profile (in terms of delay and loss probabilities) for improving the number of multimedia applications that can be admitted in a mobile networking environment. In the next paper, Schönfeld and Pomnitz propose a testbed for mobile multimedia applications. This testbed helps in generating test sequences that can otherwise be encountered only by moving around the equipment to be tested.

Hooda, Karmouch, and Abu-Hakima, in the third paper, present techniques for managing mobility of users in a virtual network. They describe a software system, *Nomad's Personal Access System* (NPAS), that provides an environment supporting personal mobility in a virtual network spanning different organizational networks. The fourth paper by Chehadah, Hurson, and Kavehrad describes organization of objects in a unicast wireless channel. They focus on the effects of mobile computing environments on query processing in multimedia databases. They propose a set of schemes for organizing multimedia objects along a single broadcast air/wireless channel. In the last paper, Prabhakaran describes a graph-search based algorithm for computing and negotiating throughput requirements of collaborative multimedia presentations with replicated objects in a mobile environment.

In summary, this special issue describes several interesting approaches for developing multimedia systems in a mobile computing environment. We believe that more research needs to be carried out for providing better mobile environments for multimedia systems.

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