Guest Editorial

Wireless and Wired Multimedia

For this special issue of the Journal of High Speed Networks we chose the topic of *Wireless and Wired Multimedia*. The increasing popularity of the World Wide Web indicates the keen desire of the general populace for ready access to multimedia rich information. The introduction of wireless and mobile networks as a means of untethered access to the same information is adding to that popularity. As streaming audio and video applications increase on the Internet, access to such applications from mobile users can also be expected to rise. Despite the increase in interest, streaming video on the Internet is not without problems today. We expect that the next wave of research in networking will come from finding efficient means of locating and disseminating multimedia rich content to wired and mobile users alike. We invited well known researchers to submit their current work and four of these papers are presented in this Special Issue of the *Journal of High Speed Networks*. The articles address resource management issues critical to multimedia applications.

In the first paper, Mainak Chatterjee and Sajal K. Das focus on an analytical model for optimal resource allocation in a CDMA system supporting integrated voice and data traffic. The authors model Poisson-distributed voice packets and Pareto-distributed data packets and evaluate the impact of the mix of voice and data packets as well as the shape parameter of Pareto distribution on performance. They derive analytical expressions for several performance metrics which are used in computing expiration times for switching MAC states resulting in better resource usage.

The next paper, by Qi Han and Nalini Venkatasubramanian, presents an information collection algorithm called the Aggregation-Based Information Collection (ABIC) algorithm as part of a middleware infrastructure for mobile environments. The algorithm is used to collect resource availability information for performing admission control and resource allocation to meet QoS requirements of mobile multimedia applications.

Andrew T. Campbell, Javier Gomez, Sanghyo Kim, Zoltán R. Turányi, András G. Valkó, and Chieh-Yih Wan of the COMET Group at Columbia University present results from the Cellular IP project in the third article. They provide details of the design, implementation and evaluation of the Cellular IP protocol as an alternative to Mobile IP with much less overhead. They propose a handoff service called semisoft handoff which reduces the handoff latency and eliminates packet loss during the handoff which will have broader implications for mobile multimedia applications.

Wu-chi Feng in the final article, presents a streaming protocol called Content-based Video Adaptation (CBVA) for delivering stored video across best-effort networks. Through experimental results, the effectiveness of the proposed approach in smoothing out the variability in frame rate delivered to the user in a best-effort network is illustrated. Also introduced is a metric called effective frame rate as a measure of how often the frame rate changes at smaller time scales. Several algorithms including CBVA are evaluated using this metric to determine the burstiness in video quality.

We hope that these articles will help expose the readers to some interesting questions related to the delivery of multimedia content on wireless and wired networks.

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