Contents Distribution to Android Clients Using Wireless LAN Multicast for a Large Fireworks Festival

Kiyoshi KONDO*, Hiroshi YAMAMOTO*, Chikara SASAKI**,
Shigehiro ANO**, Katsuyuki YAMAZAKI*

*Department of Electrical Engineering, Nagaoka University of Technology, Japan

**KDDI R&D Labs. Inc., Japan

kondo21@stn.nagaokaut.ac.jp

***Abstract*—In recent years, with the spread of high performance mobile terminals, an information distribution system for them has been attracting attention in various situations. However, it is difficult to use the existing TV-based broadcasting systems for a mobile phone because a license and large-scale facilities are necessary. In this paper, we propose a new information distribution system. The proposed system broadcasts contents towards a wireless LAN interface of the mobile phone (e.g., Android terminal) by using IP multicasting. However, IP multicast packets are not retransmitted at MAC, which may result in degradation of communication quality. Therefore, we have evaluated the communication characteristics of IP multicast, and have clarified that the continuous packet loss rarely occurs, hence, the packet loss can be complemented by redundantly sending the same data several times. Based on this result, a new redundant data transmission method is proposed. We have developed the proposed system and performed the experimental evaluation in Nagaoka Fireworks Festival where about 400,000 people participate. From this experiment, it has been concluded that the proposed system has satisfactory worked for contents distribution.**

***Keyword*—Information Distribution System, Wireless LAN, IP Multicast, Android Terminal, Packet Loss Properties**

Kiyoshi Kondo received B.E. degree from Nagaoka University of Technology in '11. He is currently a graduate school student in Nagaoka University of Technology. His research interests include computer networks and contents distribution system.

Hiroshi Yamamoto received M.E. and D.E. degrees from Kyushu Institute of Technology, Iizuka, Japan in '03 and '06, respectively. From April '06 to March '10, he worked at FUJITSU LABORATORIES LTD., Kawasaki, Japan. Since April '10, he has been an Assistant Professor in the Department of Electrical Engineering, Nagaoka University of Technology. His research interests include computer networks, distributed applications, and networked services. He is a member of the IEEE.

Chikara Sasaki graduated from Tokyo Institute of Technology, Japan and received a Master's degree in Information and Communication Engineering in '04. After graduation, he joined KDDI R&D Laboratories, Japan. He studies content deliver networks and IP multicast.

Shigehiro Ano received the B.E. and the M.E. degrees in electronics and communication engineering from Waseda University, Japan in '87 and '89, respectively. Since joining KDD in 1989, he has been engaged in the field of ATM switching system and ATM networking. His current research interests are traffic routing, control and management schemes over the next generation IP networks. He is currently the Senior Manager of Communications Network Planning Lab. in KDDI R&D Laboratories Inc. He received IPSJ Convention Award in '95 and IEICE Communications Society Best Paper Award in '10 and '12, respectively.

Katsuyuki Yamazaki received B.E. and D.E degrees from the University of Electro-communications and Kyushu Institute of Technology in '80 and '01, respectively. At KDD Co. Ltd., he had been engaged in R&D and international standardization of ISDN, S.S. No.7, ATM networks, L2 networks, IP networks, mobile and ubiquitous networks, etc., and was responsible for R&D strategy of KDDI R&D Labs. He is currently a Professor of Nagaoka University of Technology.