Optimization of TAC Configuration in Mobile Communication Systems: A Tabu Search Approach

Hyung-Woo Kang*, Hyon-Goo Kang**, Seck-Joo Koh*

**School of Computer Science and Engineering, Kyungpook National University, Korea*

***Access Network Lab, SK Telecom, Korea*

hwkang0621@gmail.com, hyongoo.kang@sk.com, sjkoh@knu.ac.kr

***Abstract*— Recently, the mobile communication has been rapidly changing the LTE-based mobile communication. In LTE-based mobile communication system, paging performance is a critical factor to be considered, a paging area is defined as TAC, which is group of cells. In this paper, we propose a new scheme for configuration of TAC to maximize the paging success rate. This scheme constructs a TAC using traffic load, TAC size and handover patterns. Then we propose the improvement algorithm using tabu search. From the performance analysis with real traffic data of Seoul in Korea, we can see that the proposed TAC configuration provides larger paging success rates than the existing TAC configuration.**

***Keyword*— Mobile Network System, Optimization, Paging, Tabu Search, Tracking Area Code**

Hyung-Woo Kang received B.S degree in Computer Science from Kyungpook National University in 2011. He is now a Master course in School of Electrical Engineering and Computer Science from Kyungpook National University. His current research interests include mobile communication systems.

He received B.S. degree in Mathematics and M.S. degrees in Industrial Engineering from KAIST in 1996 and 1998. He also received Ph.D. degree in Industrial Engineering in KAIST in 2003. From 2003 to 2011, he worked for WiMAX and LTE System Design and SW Development in Samsung Electronics. Since 2011, he has been with the Access Network Lab in SK Telecom, as an R&D Manager, Ph.D. E-mail: hyongoo.kang@sk.com

Prof. Koh received B.S. and M.S. degrees in Management Science from KAIST in 1992 and 1994, respectively. He also received Ph.D. degree in Industrial Engineering from KAIST in 1998. From August 1998 to February 2004, he worked for Protocol Engineering Center in ETRI. Since March 2004, he has been with the school of Electrical Engineering and Computer Science in the Kyungpook National University as an Associate Professor. His current research interests include mobility control in Future Internet, mobile SCTP, and mobile multicasting. He has also participated in the International Standardization as an editor in the ITU-T SG13 and ISO/IEC JTC1/SC6.