# Weighted Conflict-Aware Channel Assignment in 802.11-based Mesh Networks

Changryeol Lee, Donghoon Shin, Sunghee Choi

*Department of Computer Science, Korea Advanced Institute of Science and Technology, Daejeon, Republic of Korea*

pittzzang@gmail.com, danny@kaist.ac.kr, sunghee@kaist.edu

***Abstract*—The hidden terminal problem, exposed terminal problem and co-channel interference problem are three main factors that limit the performance of wireless mesh networks. The network throughput can be increased by using multi-radio multi-channel technology through using different channels to avoid the collisions. In this paper, we provide a channel assignment scheme considering interference, hidden/exposed terminal problem all together. For this scheme, we first propose a weighted conflict model in multi-channel multi-radio wireless mesh networks and define a *Max list-Cut* problem on the weighted conflict graph. We present an approximation algorithm for the *Max list-Cut* problem to solve the channel assignment problem. Our simulation results show that the proposed channel assignment scheme achieves high network performance in various topologies.**

***Keyword*— Channel Assignment, Interference Problem, Hidden/Exposed Terminal Problem, Conflict Graph, Max list-Cut**

**Changryeol Lee** received the B.S. degrees in Information and Computer Engineering from Ajou University, Suwon, Korea, in 2004, and the M.S. degrees in Computer Science at Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea, in 2009. He has been working as a researcher in Tmax R&D center since 2013. His research interests include geometric problems in wireless sensor networks, computational geometry, and operating systems.

**Donghoon Shin** received the B.S. degrees in Computer Science and Electronic Engineering from Handong University, Pohang, Korea, in 2007. He got his M.S. degree in 2009 and is currently working toward a Ph.D. degree in Computer Science at Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea. His research interests include geometric problems in sensor networks and computational geometry..

**Sunghee Choi** received the B.S. degree in computer engineering from Seoul National University in 1995, and the M.S. and Ph.D. degrees in computer science from the University of Texas at Austin, in 1997 and 2003, respectively. She has been working as a professor in Computer Science Department at Korea Advanced Institute of Science and Technology (KAIST) Daejeon, Korea since 2004. Her research interests include computational geometry, computer graphics and geometric problems in wireless sensor networks.