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## Self-stabilizing distributed formation of maximal independent sets in mobile ad hoc networks

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In a mobile ad-hoc network (MANET), a collection of devices form an independent set if no devices in this set are neighbors of each other. These devices can serve as media stores that provide media contents to their neighboring devices. This paper proposes a self-stabilizing protocol that allows devices to autonomously form an independent set in a MANET. The self-stabilization property ensures that starting from an arbitrary state (possibly illegitimate), the system eventually enters a legitimate state, which tolerates transient faults. The formed set is guaranteed maximal in the sense that no proper superset of it is also an independent set. The challenge of such protocol design lies in dynamic participations of wireless devices (due to mobility or changes of power status) and error-prone wireless transmissions. These characteristics are not seen in traditional distributed system, where processes are static and communicate with each other by sharing variables. We prove correctness and analyze stability property of the proposed protocol. Simulation results indicate that the proposed protocol finds independent sets of larger size when compared with existing approaches.

### Biography

Li-Hsing Yen received his PhD degree in Computer Science from National Chiao Tung University, Taiwan (1997). He had been with Chung Hua University, Taiwan from 1998 to 2006. He was an Associate Professor (2006 to 2010) and has been elevated to Full Professor (2010~) at the Department of Computer Science and Information Engineering, National University of Kaohsiung, Taiwan. His current research interests include mobile computing, wireless networking, and distributed algorithms. He has won IEEE WCNC 2013 Best Paper Award. He has served on the editor boards of Springer's Wireless Networks and is a member of IEEE.

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