

Seminar Announcement

Communication Sciences

Mathematical Analysis of Throughput Bounds in Random Access with ZigZag Decoding

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Abstract: We investigate the throughput improvement that ZigZag decoding (Gollakota and Katabi (2008)) can achieve in multi-user random access systems. ZigZag is a recently proposed 802.11 receiver design that allows successful reception of packets despite collision. Thus, the maximum achievable throughput of a wireless LAN can be significantly improved by using ZigZag decoding. We analyze the throughput bounds in three different idealized slotted multi-access system models for the case when ZigZag decoding is used. We also provide results for the Aloha and CSMA models where exact closed form solutions are infeasible to calculate. Our analysis and simulation results show that ZigZag decoding can significantly improve the maximum throughput of the random access system.

Biography: Jeongyeup Paek is a Ph.D. student at Computer Science Department, University of Southern California, advised by Dr. Ramesh Govindan. He received his B.S. degree from Seoul National University in 2003 and his M.S. degree from USC in 2005, both in Electrical Engineering. Jeongyeup Paek's research has focused on topics in wireless sensor network systems such as reliable transport protocols, architecture for tiered embedded networks, and sensor network applications such as structural health monitoring.

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