



THE CHINESE UNIVERSITY OF HONG KONG
 Institute of Network Coding
 and
 Department of Information Engineering
Seminar



**Survivable Distributed Storage with
 Progressive Decoding**

by

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Date : 6 October 2011 (Thursday)
Time : 11:30 am - 12:30 pm
Venue : Room 833, Ho Sin Hang Engineering Building
The Chinese University of Hong Kong

Abstract

To harness the ever growing capacity and decreasing cost of storage, it is important to provide an abstraction of survivable storage in presence of Byzantine failures due to the prevalence of computer virus and software bugs. In this talk, we propose a *storage-optimal and computation efficient primitive* to spread information from a single data source to a set of storage nodes, which allows recovery from both crash-stop and Byzantine failures. In presence of crash-stop and Byzantine failures, a progressive data retrieval scheme is employed, which retrieves just enough data from live storage nodes. It adapts the cost of successful data retrieval to the degree of errors in the system. The cost of communication in data retrieval is derived analytically and corroborated by Monte-Carlo simulation results.

Biography

Yunghsiang S. Han received B.Sc. and M.Sc. degrees in electrical engineering from the National Tsing Hua University, Taiwan, in 1984 and 1986, respectively, and a Ph.D. degree from the School of Computer and Information Science, Syracuse University, NY, in 1993. He was with Hua Fan College of Humanities and Technology, National Chi Nan University, and National Taipei University, Taiwan. From August 2010, he is with the Department of Electrical Engineering at National Taiwan University of Science and Technology.

Dr. Han's research interests are in error-control coding, wireless networks, and security. Dr. Han has conducting state-of-the-art research in the area of decoding error-correcting codes for more than sixteen years. He first developed a sequential-type algorithm based on Algorithm A* from artificial intelligence. At the time, this algorithm drew a lot of attention since it was the most efficient maximum-likelihood decoding algorithm for binary linear block codes. Dr. Han has also successfully applied coding theory in the area of wireless sensor networks. He has published several highly cited works on wireless sensor networks such as random key pre-distribution schemes. He also serves as the editors of several international journals.

Dr. Han was the winner of the Syracuse University Doctoral Prize in 1994 and a Fellow of IEEE.

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