School of Computer Science
M.S. Thesis Defense

By
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Improving Zap Time and Bandwidth Utilization in IPTV Networks

ABSTRACT

Digital television systems have a clear disadvantage relative to analog systems in users' quality of experience, most notably in the time required to change channels, or zap time. The goal of this research is to improve the performance of a multicasting IPTV network, both in user experience and in resource consumption. We formulate the problem of assigning IPTV clients to servers (the Client Assignment Problem, or CAP) as an integer programming model, in variants which minimize channel-change times, overall network capacity consumption, or both. This problem is shown to be computationally hard, and the performance of the models is tested on problems of difference sizes. Polynomial-time heuristics are presented which address a relaxed version of the CAP, and the performance of these heuristics is measured. Heuristic solutions to problem instances which are infeasible for the full CAP are used to extend network capacities, creating feasible problem instances. The heuristics, as well as a partial solution for the full CAP, are used to provide initial states for optimizing the models of the full CAP.

Date: Friday, July 22, 2011

Time: 9:00 a.m. – 10:00 a.m.

Place: DEH 151

Committee members: **Dr. Sridhar Radhakrishnan – Chair**
Dr. John Antonio
Dr. Suleyman Karabuk (IE)

Reading Copy available in Computer Science Graduate Assistant's office DEH 105

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