You are invited to an IEOR Monday Special Seminar:

Distributed Control of Stream Processing Networks

Cathy H. Xia, Ph.D.
Senior Research Scientist, IBM TJ. Watson Research Center

Abstract

Recent advances in networking and information technology boost the development of new and advanced services offered over communication systems that integrate a widely heterogeneous mix of applications and computer devices. Without careful traffic control and resource management, the implied dramatic increase in the demand for networking resources and remote application services may lead to substantial degradation of the Quality of Service as experienced by the end users.

In this talk, we consider the problem of joint admission control and dynamic resource allocation in a stream processing network so as to optimize the overall system utility. With a primal-dual based optimization approach, we show that the resource allocation problem and the admission control problem can be decomposed. We then present a distributed algorithm which incorporates a push-and-pull based admission control mechanism, and a max pressure-cost ratio policy for resource allocation. We show that the algorithm guarantees the stability of the network and converges to the optimal solution. We also propose an interior-point based method that can help speed up the convergence.

Various numerical experiments are then presented to demonstrate the quality of the solution and the speed of convergence.

3108 Etcheverry
Monday, 12 February 2007
3:30PM-4:30PM

COME EARLY! REFRESHMENTS WILL BE SERVED AT 3:00PM

For updates on Future Speakers and Seminars visit:
http://www.ieor.berkeley.edu/Seminars/index.htm

Industrial Engineering and Operations Research Seminar Series