香港中文大學
The Chinese University of Hong Kong

Institute of Theoretical Computer Science and Communications

ITCSC Seminar

An Axiomatic Theory of Fairness

By
Professor Mung Chiang
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August 31, 2009 (Monday)
11:00am - 12:00noon
Rm. 1009, William M.W.Mong Engineering Building, CUHK

Abstract:
We present a set of five axioms for fairness measures in resource allocation. A family of fairness measures satisfying the axioms is constructed. Well-known notions including index-based fairness and alpha-fairness are shown to be special cases, and properties of fairness measures satisfying the axioms are proven, including Schur-concavity. Among the engineering implications is an interpretation of "larger α is more fair". We also construct an alternative set of four axioms to capture efficiency objectives and feasibility constraints.

Biography:
Mung Chiang is an Associate Professor of Electrical Engineering, and an Affiliated Faculty of Applied and Computational Mathematics and of Computer Science, at Princeton University. He received the B.S. (Honors) in Electrical Engineering and Mathematics, M.S. and Ph.D. degrees in Electrical Engineering from Stanford University in 1999, 2000, and 2003, respectively, and was an Assistant Professor at Princeton University 2003-2008. His research areas include optimization, distributed control, and stochastic analysis of communication networks, with applications to the Internet, wireless networks, broadband access networks, and content distribution.

His awards include Presidential Early Career Award for Scientists and Engineers 2008 from the White House, Young Investigator Award 2007 from ONR, TR35 Young Innovator Award 2007 from Technology Review, Young Researcher Award Runner-up 2004-2007 from Mathematical Programming Society, CAREER Award 2005 from NSF, as well as Frontiers of Engineering Symposium participant 2008 from NAE and SEAS Teaching Commendation 2007 from Princeton University. He was a Princeton University Howard B. Wentz Junior Faculty and a Hertz Foundation Fellow. His paper awards include ISI citation Fast Breaking Paper in Computer Science, IEEE INFOCOM Best Paper Finalist, and IEEE GLOBECOM Best Student Paper. His guest and associate editorial services include IEEE/ACM Trans. Netw., IEEE Trans. Inform. Theory, IEEE J. Sel. Area Comm., IEEE Trans. Comm., IEEE Trans. Wireless Comm., and J. Optimization and Engineering. He has filed 16 patents and co-chaired 38th Conference on Information Sciences and Systems.

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