

The Hong Kong University of Science and Technology  
Department of Information Systems,  
Business Statistics and Operations Management

Seminar Announcement

*Distinguishing influence-based contagion from  
homophily-driven diffusion in dynamic networks*

by

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**Date: Tuesday, 12 January 2010**

**Time: 11:00 am – 12:30 pm**

**Venue: Room 4379, ISOM Conference Room (Lift 17/18)**

~~~~~ All interested are welcome ~~~~~

**Abstract:**

Node characteristics and behaviors are often correlated with the structure of social networks over time. While evidence of this type of assortative mixing and temporal clustering of behaviors among linked nodes is used to support claims of peer influence and social contagion in networks, homophily may also explain such evidence. Here we develop a dynamic matched sample estimation framework to distinguish influence and homophily effects in dynamic networks, and we apply this framework to a global instant messaging network of 27.4 million users, using data on the day-by-day adoption of a mobile service application and users' longitudinal behavioral, demographic, and geographic data. We find that previous methods overestimate peer influence in product adoption decisions in this network by 300–700%, and that homophily explains >50% of the perceived behavioral contagion. These findings and methods are essential to both our understanding of the mechanisms that drive contagions in networks and our knowledge of how to propagate or combat them in domains as diverse as epidemiology, marketing, development economics, and public health.

**Biography:**

Sinan Aral is an Assistant Professor of Information, Operations and Management Sciences. He received his PhD from the MIT Sloan School of Management. Prior to MIT, he was a Fulbright Scholar and worked at the European Commission in Brussels and as a technology consultant for several Fortune 500 firms.

Professor Aral examines the role of information and information technology in the productivity and performance of firms. Specifically, his research follows two streams: The first stream measures how information flows and IT use impact the productivity of information workers, who now account for over 60 percent of the labor force and nearly 70 percent of the GDP of the United States. The second research stream measures the impact of firm-level IT investments on productivity and business value. His work has been published or is forthcoming in leading journals such as *Organization Science* and the *Sloan Management Review*, has been mentioned in popular press outlets such as the *New York Times* and *CIO Magazine*, and has won several best paper awards.

He is a Phi Beta Kappa graduate of Northwestern University (B.A.) and holds an M.Sc. from the London School of Economics and an M.P.P. from Harvard University.