# NYU Stern School of Business
## Department of Information, Operations & Management Sciences
### OPERATIONS MANAGEMENT RESEARCH SEMINAR

**TOPIC:** Optimal allocation design without transfers
**SPEAKER:** Itai Ashlagi (MIT)
**DATE:** Wednesday, April 9, 2014
**TIME:** 11:00 AM-12:00PM
**PLACE:** KMC 3-60

## ABSTRACT

This paper studies the allocation of goods to agents without monetary transfers and incomplete information. Agents' have private, multi-dimensional utilities over goods, drawn from commonly known priors, possibly asymmetric across agents' types. Both cardinal and ordinal mechanisms are studied. For tractability, a large market approximation is considered with a continuum of agents for each type. We characterize incentive compatible mechanisms that are Pareto-optimal with respect to each type. For general objective functions, this allows reducing the mechanism design problem to a well-defined optimization problem with a few continuous variables. We apply this framework to real data from Boston 2012-2013 school choice reform. The goal is to design an optimal ordinal mechanism to assign students to public schools to maximize a linear combination of utilitarian and max-min welfare, subject to capacity and transportation constraints. We show how to optimally solve a large market model with over 868 types of students and 77 schools, translate the solution into the finite market setup and yield a feasible solution, which significantly outperforms the baseline plan chosen by the city in terms of efficiency, equity, and predictability.

## BIO

Itai Ashlagi received his PhD in Operations Research in the Technion at 2008 and was a post doctorate for two years in Harvard University. He joined MIT as an Assistant Professor of Operations Management at the Sloan School of Management. He is interested in Market design, game theory and more generally topics on the border of Operations and Microeconomic Theory. He received the outstanding paper award in ACM conference of Economics and Computation (2009), the recipient of the NSF CAREER award (2012) and a finalist in the Franz Edelman competition this year (2014).