

**Title: Managing Cascading Disruptions Through Optimal Liability Assignment**

**Speaker: Prof. Jay Sethuraman, IIEOR Department, Columbia University**

**Area: Economics**

**Date: 20.07.2024, Venue: P21 @ 12.00 - 1.00PM**

**Abstract:**

I'll describe a model in which agents on a chain make simultaneous preparatory investments to increase chances of honouring their respective bilateral agreements. Failures cascade: if one fails their agreement, then so do all who follow in the chain. Thus, later agents' investments turn out to be pointless when there is an earlier failure. How losses are shared affects how agents invest to avoid the losses in the first place. I'll characterize all efficient solutions: these have the form that later agents---who are not directly liable for the disruption---still shoulder some of the losses. Importantly, I'll show that such indirect liabilities are necessary to avoid unbounded inefficiencies.

**Speaker Profile:**



Jay Sethuraman is interested in designing *effective* resource allocation mechanisms. He has developed new mechanisms for assigning students to public schools. He has applied optimization tools and techniques to study matching and allocation problems in which fairness and incentives are important. A major focus of his current interests is the role of operations research methods in public decision making problems.

Of particular interest to Sethuraman is the emerging area of "Market Design," which seeks to understand why some markets and institutions work well whereas others don't, and uses these insights to engineer good outcomes in different environments. Exploring the properties of mechanisms in terms of fairness, incentives, and economic efficiency as well as computational efficiency is a key step in this exercise, and Sethuraman has developed this axiomatic approach for rationing problems in networks as well as for matching and assignment problems. Due to the inter-disciplinary nature of this research, Sethuraman collaborates with economists as well as computer scientists on these research questions.

Sethuraman received a BE (Hons.) in electrical and electronics engineering from the Birla Institute of Technology and Science in 1991, an MSc. (Engg.) in computer science from the Indian Institute of Science in 1994, and a PhD in operations research from the Massachusetts Institute of Technology in 1999.

Webpage Link: <https://www.engineering.columbia.edu/faculty/Jay-Sethuraman>