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Data Science Seminar Series

Graph-based Anomaly Detection: Problems, Algorithms, and Applications

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Graphs provide a powerful abstraction for representing non-iid data, capturing immediate as well as long-range dependencies between entities. The study of the structure and dynamics of real-world graphs has been a central theme of research across various communities. Graph-based anomaly detection focuses broadly on identifying those 'constructs' that do not 'fit' the expected relational patterns.

This talk involves vignettes from my decade-long research on anomaly detection using graph-based techniques. I will introduce various scenarios in which graphs can be used in a natural way -- both to formalize concrete anomaly detection problems, and to develop algorithmic anomaly detection methods. These will be motivated by real-world applications of anomaly detection in the wild; including opinion fraud, accounting anomalies, and host-level intrusion.

Leman Akoglu is the Heinz College Dean's Associate Professor of Information Systems. She also holds courtesy appointments in the Computer Science Department (CSD) and the Machine Learning Department (MLD) of School of Computer Science (SCS). Prior to this, she was an Assistant Professor in the Department of Computer Science at Stony Brook University since receiving her Ph.D. from CSD/SCS of Carnegie Mellon University in 2012.