

Social Network Analysis

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Optional Reading List

Unit 1:

Introduction

Networks, crowds, and markets book, Chapter 1: Overview

Basic Network Properties, Random Graph Model

Networks, crowds, and markets book, Chapter 2: Graphs

The Small World Phenomena

Networks, crowds, and markets book, Chapter 20: The Small-World Phenomena

Power-laws and Preferential attachment

Networks, crowds, and markets book, Chapter 18: Power Laws and Rich-Get-Richer Phenomena

Link Analysis, PageRank

Networks, crowds, and markets book, Chapter 14: Link Analysis and Web Search

Unit 2:

Community structure in networks, Triadic closure

Networks, crowds, and markets book, Chapter 3: Strong and Weak Ties

Network community detection, Modularity optimization

Mining Massive Datasets book, Chapter 10.4

Unit 3:

Overlapping communities in networks

G. Palla, I. Derenyi, I. Farkas, T. Vicsek. Uncovering the overlapping community structure of complex networks in nature and society. *Nature* 435, 814-818, 2005.

Unit 4:

Cascading Behavior: Decision Based Models of Cascades

Networks, crowds, and markets book, Chapter 19: Cascading Behavior in Networks

Cascading Behavior: Probabilistic Models of Information Flow

Networks, crowds, and markets book, Chapter 21: Epidemics

Influence Maximization

D. Kempe, J. Kleinberg, E. Tardos. Maximizing the Spread of Influence through a Social Network. In Proc. KDD 2003.

Game-theoretic modeling

Networks, crowds, and markets book, Chapter 6: Games

Bayesian learning *Networks, crowds, and markets* book, Chapter 16: Information Cascades

Unit 5:

Link Prediction and Network Inference

L. Backstrom, J. Leskovec. Supervised Random Walks: Predicting and Recommending Links in Social Networks. In Proc. WSDM, 2011.