Friend Recommendation System

Emre Dogru

Arif Yilmaz

Information Retrieval Systems

Outline

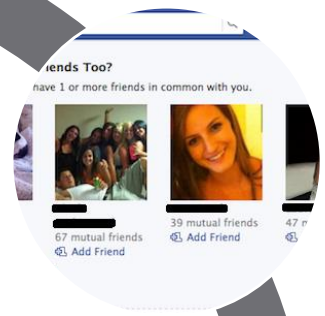
- Problem Definition
- Methodology
- Input Data
- Expected Results

Introduction

- Social networks growing in popularity and importance
  - Change the human social behavior
- Why recommendation systems?
  - Successful recommendations increase sell
  - Based on previous knowledge
- Some have already provided such systems;
  - Based on analysis of user A's friends network and Friends Of Friends (FOF)

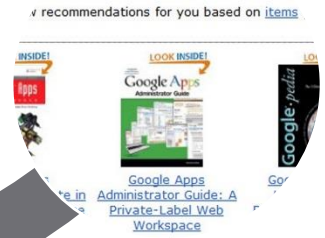
Problem Definition

How do they do that?



Facebook suggests people you may be (or should be) friends with

Netflix suggests movies you might like



Amazon suggests products to buy.

- The central problem is to propose relevant parameters for nodes relationship using the information from the social network topology and statistical properties obtained by using classical metrics of complex networks

Methodology

- Recommend by number of common friends
- Recommend by influence
- Graph based recommendation using genetic algorithm

Input Data

- Nodes: 456,626
- Edges: 14,855,842
- Nodes in largest WCC: 456,290
- Edges in largest WCC: 14,855,466
- Nodes in largest SCC3: 60,210
- Edges in largest SCC : 14,102,605
- Average clustering coefficient: 0.188

Testing

- Randomly choose a real friend connection; call the two friends F1 and F2.
- Remove their friendship from the graph.
- Compute friend recommendations for F1 and F2.
- Determine the rank of F1 in F2's list of recommended friends.
  Determine the rank of F2 in F1's list of recommended friends.
  Take the average of ranks of F1 and F2.
- Put their friendship back in the graph.

Expected Results

EXPERIMENTAL RESULTS

	GBFRGA	FOF
correct set of one-way relationships	20,83%	13,33%
Acceptance of the recommendation	77,69%	72,22%

We expect some improvement in this result since we will add recommendation by influence techniques into graph-based friend recommendation using genetic algorithm

Q&A

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Reference

- Silva, Nitai B., et al. "A graph-based friend recommendation system using genetic algorithm." *Evolutionary Computation (CEC), 2010 IEEE Congress on*. IEEE, 2010.
- "Social Networking and Recommendation Systems." Social Networking and Recommendation Systems. Web. 28 Mar. 2016.