Analysis of Social Information Networks

Thursday January 20th, Introductory Lecture
Motivation

2010 was “socially” obsessed
- Time Person of the year
- The “social network” makes $200m box office
- Facebook is becoming the world largest “country”, raises important issues

What’s behind the scene?
What does it mean for computer scientists?
What about 2011, 2016, 2021?
What *primarily* matters is your social environment!

- For Business: how to best advertise a product?
- For Media: how to extract sound and relevant information?
- For Engineers-CS: how to best design an application?
- For Science at large: how to understand tipping points?

... 4 (classical) questions, being reinvented *today*
Large set of **personal information** about users
- History of Browsing, Purchasing, Rating
- Sociological profile (age, gender, location, income)
- Community of interests

Large set of **relational information** about users
- Connections (friendship, collaboration, schoolmate)
- Contacts (email IM phone calls etc., meeting)
In the industry:
- Users’s data are company’s key differentiating factor
- You (not me) are the social media generation!

In the academia:
- CS handles “complexity” with depth and elegance.
- A growing trend (ex: Columbia, Cornell, U. Penn)
The topic is **broad:**

“CS-theory, Networking, Sociology, Physics”

– This is why the course **focuses** on algorithmic prop.

The topic seems (at times) **immature:**

“What is a good model? a cause? a correlation?”

– Algorithmic research problems have an **impact**

Involves **some** mathematical notions:

– Goal: **self-contained** (do ask for more background)
Organization

* 8 first lectures: “fundamentals”
  – Weekly review homework (contains 2/3 of midterm)
  – Your participation: scribing
* 6 last lectures: “advanced topics”
  – Bird’s eye view of social media + new trends
  – Your participation: paper presentation & discussions
* Projects: topic review or research case study (later)
* Office hours: Abassi
  Chaintreau Wed 2-3:30pm, CEPSR 610
More on the course

* The Wiki slides, scribing, etc.
* The “Apple” Policy
* Friends of the course
  This semester:
  X. Chen “Alg. Game Theory”
  P. Rodriguez “System PoV”
* Please answer survey (3mn, promised)
What’s in the box?

- Power-law: How popular items build up?
- Epidemics: How gossip (and virus) propagates?
- Influence: What can promote or block innovation?
- Hidden structures:
  * Ranking: How to select the most important items?
  * Similarity: How to exploit others’ tastes?
  * Division: How to cut networks
- Overview of latest data and empirical dynamics.
- A session on mobile social services?