Lecture 0: Welcome to the class!

Who should take it? How to attend?

COMS 4995-1: Introduction to Social Networks
Tuesday September 6th
How is your 1st Columbia day?
How is your 1st social network class?
Motivation

2010 was “socially” obsessed
- Time Person of the year
- The “social network” makes $220m 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?
“Only the paranoid survive”

What if ...
- Current bubble explodes?
- Social media sold at its real market value?
- Social-networking not cool?

A. Grove (Intel cofounder)
Previous “bubble burst”

* All previous bubble episode were retrospectively very important to deploy game changer.

* Late 80s ... cheap microprocessors, no applications
  - But had brought millions of pcs to business/home

* Late 90s ... end of the dot-com boom
  - But the Internet infrastructure was built for future

* 2010-?: peak of the social boom

“This Tech Bubble Is Different”, A. Vance, Businessweek, 04/17/2011
Today

What are we building for the next generation?
The next generation could be the one with access to an unprecedented amount of behavioral data.

This can solve real problems:
- not just finding a movie or a restaurant
- ensuring energy efficiency
- monitoring our environment
- reduce inequality
- informing social decision
Challenges ahead

* A better data ownership model
  o Can users regain control over their data?
  o “We are Google's product, not its customers”, S. Vaidhyanathan, *The googlisation of everything* (2011)

* A more open architecture
  o Multiple authorities interacting?

* Better data mining
  o Exploit new dimension (mobility)? Distributed?
What *primarily* matters is your social environment!

- For Business: how to best advertise a product?
- For Media: how to find most relevant information?
- For Engineers-CS: how to best design an application?
- For Science and Society at large: how to understand human behavior? Take advantage of it?

... 4 (classical) questions, being reinvented *today*
What are Social Networks?

* 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:
  o Users’s data are company’s key differentiating factor
  o You (not me) are the social media generation!

In the academia:
  o CS deals with “complexity” deeply and elegantly.
  o A growing trend (ex: Columbia, Cornell, U. Penn)
Before starting the trip
Before starting the trip

* There is no textbook!

It might be too much!
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 THE model? How to tell where is the cause?”

- Algorithmic research problems have an **impact**

Involves **some** mathematical notions:

- Goal: **self-contained** (do ask for more background)
Objectives of this class

* Introduce concepts used in social networks
  o Connected to important scientific questions
  o and real systems, practical problems

* Manipulate these concepts
  1. Make them familiar
     Proof in class, Problem set to practice
  2. Make them available for your critical eye
     Interpretation case-studies
Organization

* Attend the 2 lectures (remotely, for CVN students)!
* Office hours: as close to the course as possible!
  Tuesday until 7pm (A. May); Thursday until 7pm (A. Chaintreau)
* Grading:
  o 6 homework assignments
  o 1 midterm (Oct. 13th), early-on
  o 1 final exam (Dec. 20th)
General philosophy: ask hard pb, grade generously
More on the course

* Main source: Wiki (forget coursework, CVN) slides, assignment, etc. + opportunities, + references + read in the news


* The “Apple” Policy
Contents:

- Structures: small world, power law, groups, space
- Dynamics: infect, influence, learn
- Computing applications: crawl, rank, protect

- Methods to take advantage of social networks

- The 10 papers that will make you a social expert