INF 674: Propagation in Graphs

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Objectives

- What?
  - Epidemics
  - Importance diffusion
  - Decentralized routing
- Where?
  - Random graphs
  - Small-worlds
- Why?
  - Understand
  - Design
- How?
  - Theory
  - Python

Course Outline

- S1: Galton-Watson processes
  - Extinction probability
  - Going Python

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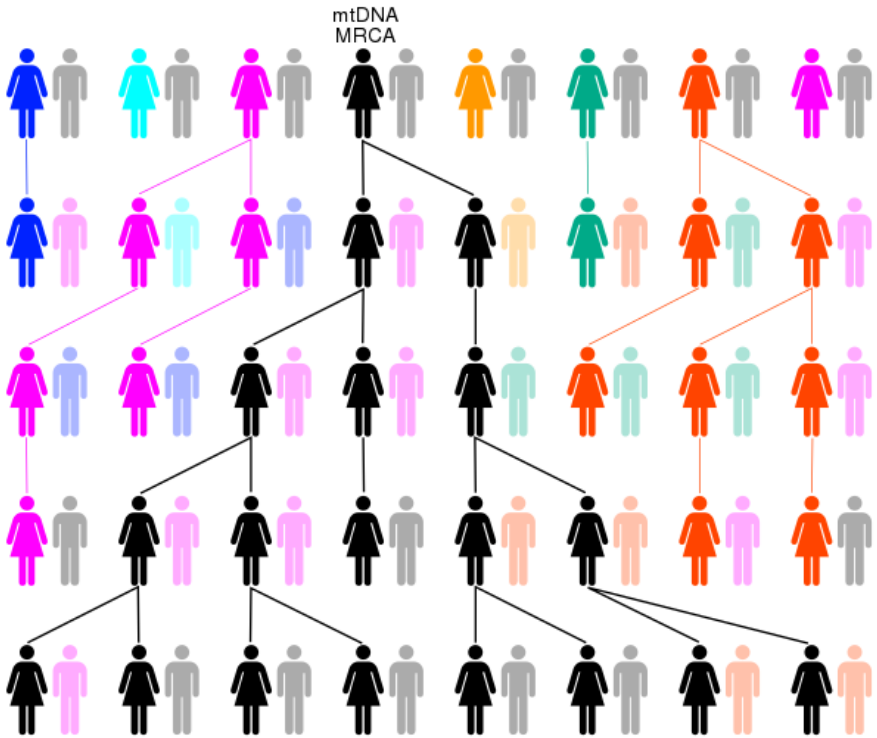
- S3: Competitive Epidemics
  - Mitochondrial Eve
  - Voter model
  - P2P Epidemic Live Streaming



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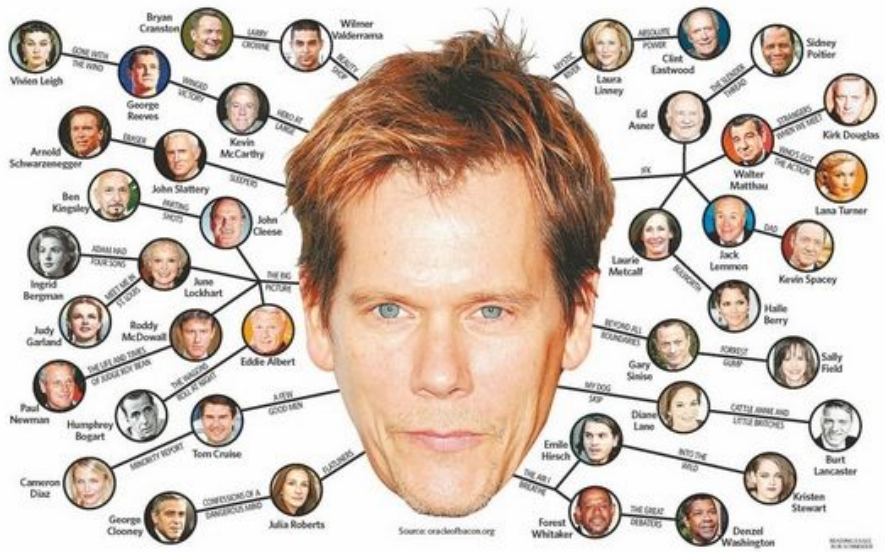
- S4-5: Small-Worlds
  - Introduction
  - Wikipedia Dataset
  - Barabási-Albert graphs



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- S6-7: PageRank
  - Definition and computing issues
  - Ranking Wikipedia

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- S8-10: Navigability
  - DHTs
  - Kleinberg's grid

Ressources

Required to follow the course:

- Python (e.g. Anaconda with Spyder)
- Brain (e.g. human)

To go deeper:

- Draief & Massoulié, Epidemics and Rumours in Complex Networks.
- Kleinberg, Networks, Crowds, and Markets.
- Adamic, Social Network Analysis, `https://github.com/ladamalina/coursera-sna`

Evaluation

Continuous Assessment