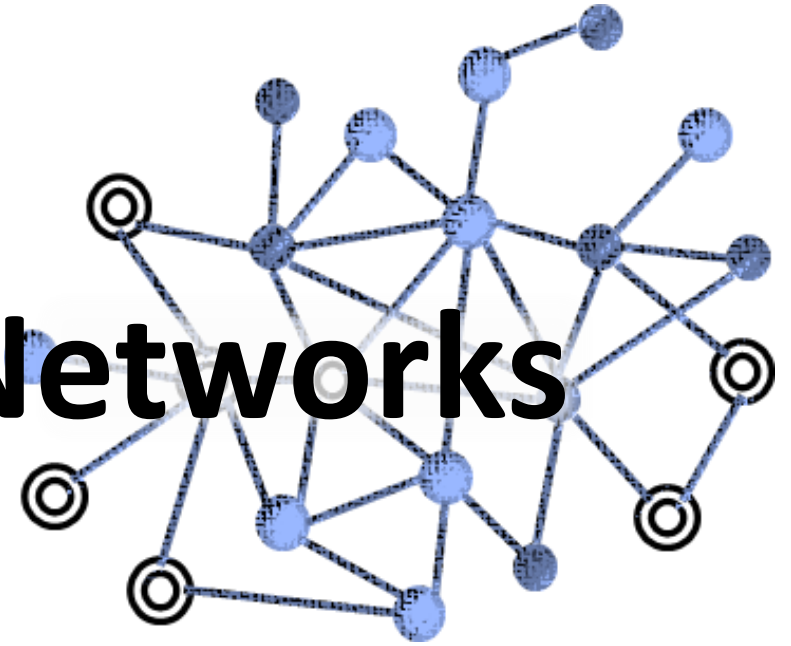




선문대학교
SUN MOON UNIVERSITY

Lecture 01

Social & Information Networks



김민경

AI소프트웨어학과

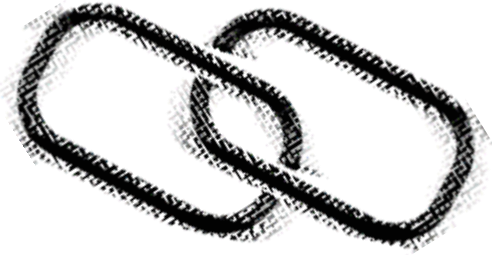
<https://www.minkyung.kim/>

Outline

- **Course Overview**

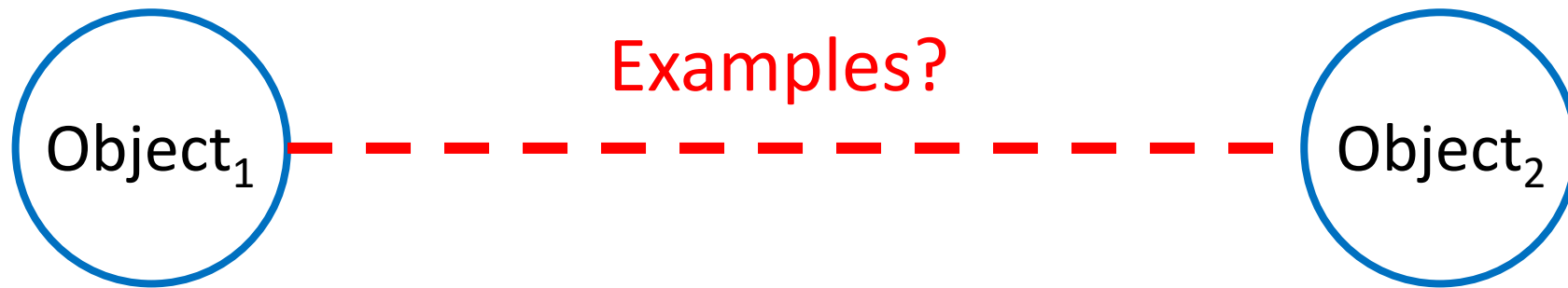
- Course Objectives
- Tentative Course Outline
- Textbooks
- Course Grading

- Introduction to Networks (Next Lecture)



Linkage is everywhere.

Lets make a link between any two objects
in the real world.



What kinds of linkages can you find from a single tweet as below?



Oprah Winfrey ✓

@Oprah

Follow



How We Make Black Girls Grow Up Too Fast
- [NYTimes.com](https://www.nytimes.com) thank you for this
[@tressiemcphd](#)



Opinion | How We Make Black Girls Grow Up Too Fast

Black girls and women in our society are always “ready” for whatever abuse is visited upon them.

mobile.nytimes.com

8:31 AM - 31 Jul 2017

5,344 Retweets 11,389 Likes

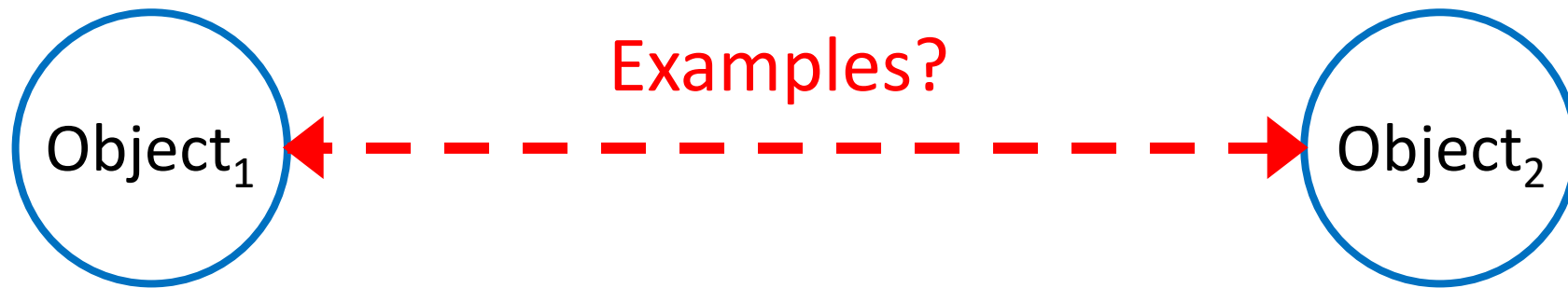


346

5.3K

11K

Lets make a link between any two objects in the real world.



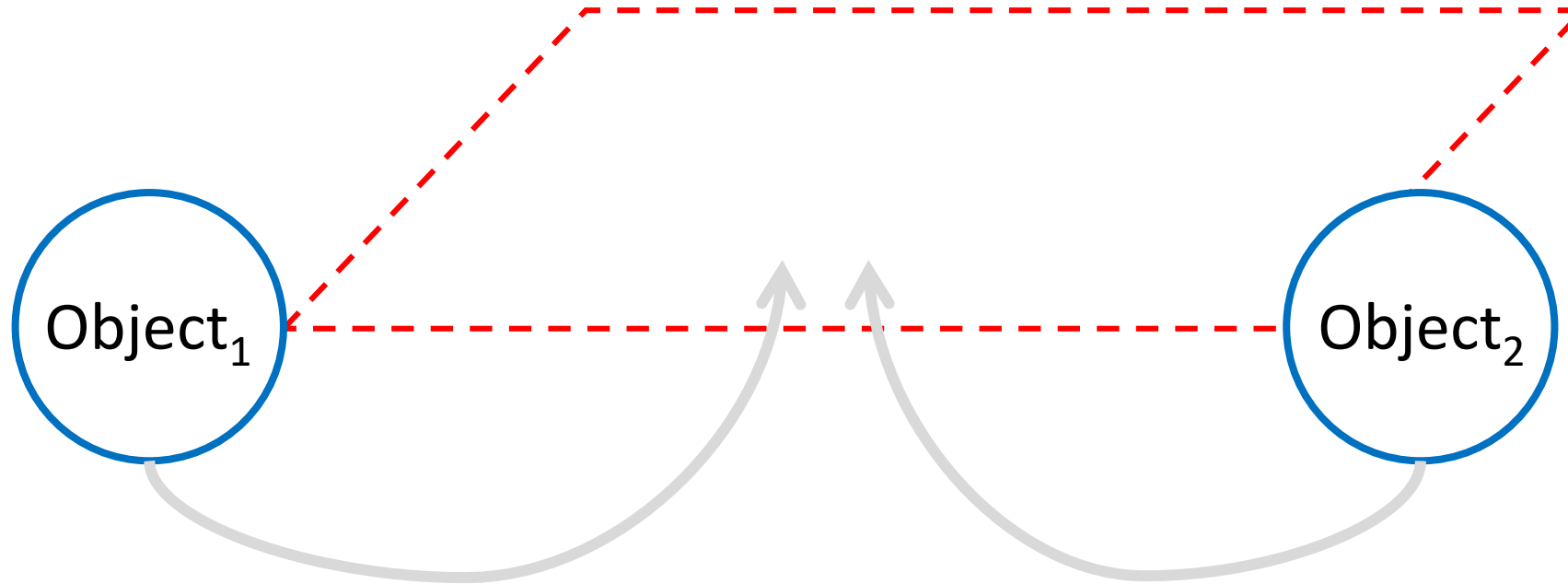
Explicit Linkage

- **[Directional]**: Follower-Followee, Like, Mention, etc.
- **[Bi-directional]**: Friendship, Family, Colleagues, etc.

What kinds of linkages can you find from the following situations?



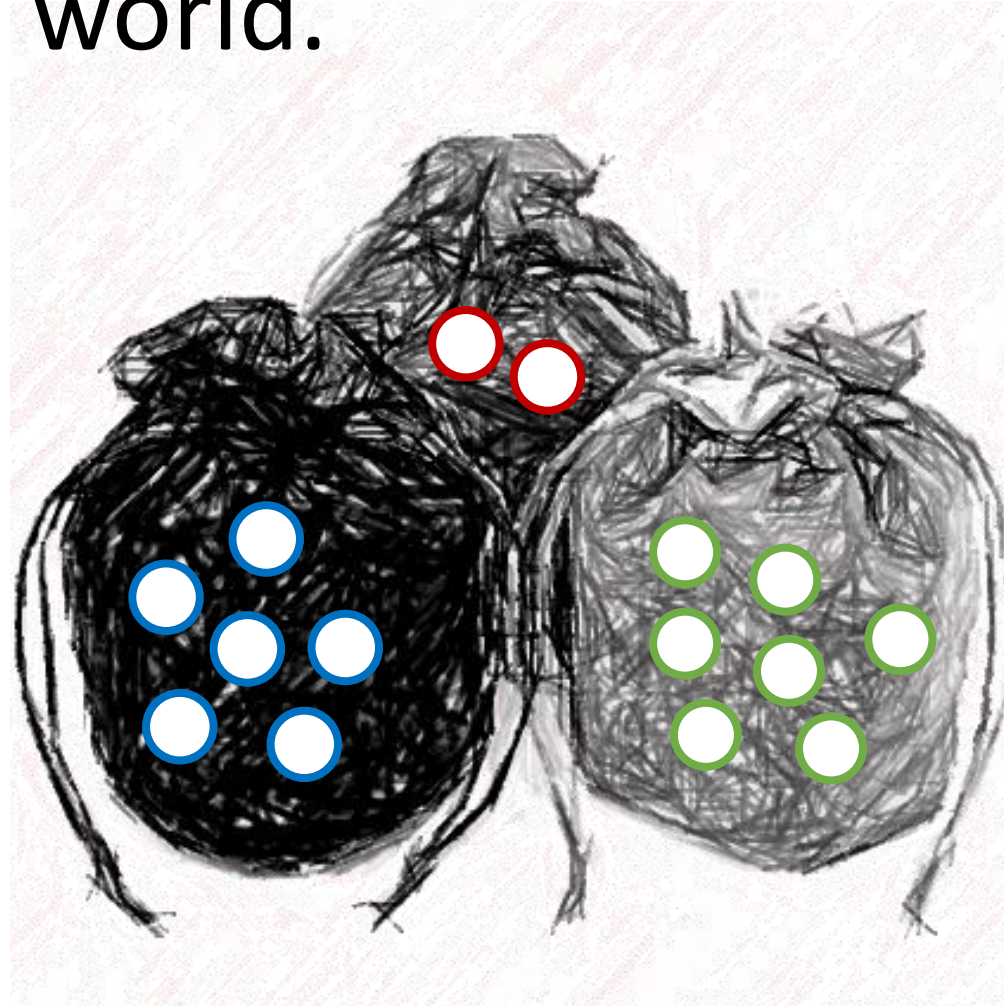
Lets make a link between any two objects in the real world.



Implicit Linkage

- Temporal, Spatial, Spatio-temporal, etc.

Lets make a link between any two objects
in the real world.



Course Objectives

- Can **define** a wide range of **linkages** in the real world
- Can accordingly **construct** **networks** based on the definition
- Can **quantify** and **understand** network **structures**
- Can **discover** the **underlying mechanisms** of time-evolving network formation **using interdisciplinary approaches**
 - Computer Science
 - Statistical Physics
 - Applied Statistics
 - Social Science
 - ...
- Can **understand** **collective behavior** in our social system

Course Outline (Tentative)

- Introduction to Social Networks & Complex Systems
- Fundamental Graph Theory
- Measuring Networks
- Interpretation of Network Structures
- Network Models – Network Formation
- Network Building Blocks
- Community Detection
- Graph Representation Learning
- Information Diffusion
- Epidemic Models

Course Schedule – Offline

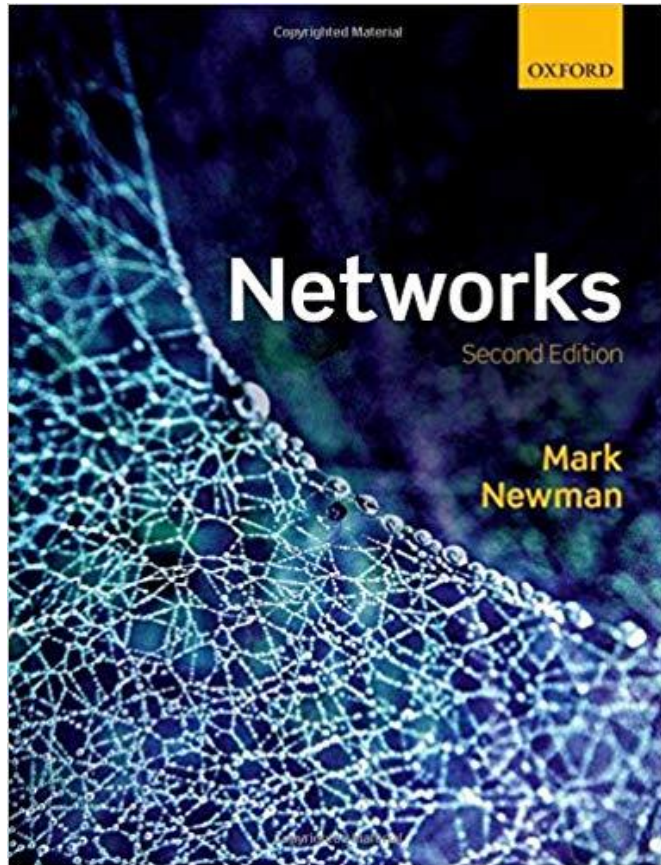
- Class Hours (원화관 604)
 - Wed 3 (11:30 – 12:20)
 - Fri 5 (13:30 – 14:20)
- Office Hour (원화관 609) – **Restricted Schedule**
 - Wed 6 (14:30 – 15:20)

Tentative Online Schedule – 1st 2weeks

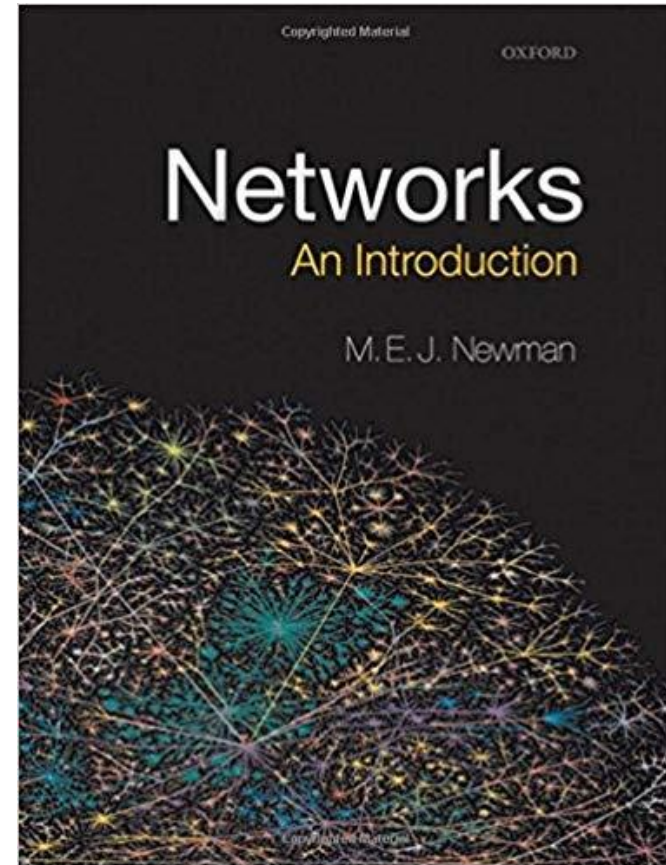
- Zoom URLs and IDs
 - Wed 3 (11:30 – 12:20):
 - <https://sunmoon.zoom.us/j/99296091758> (ID: 992 9609 1758)
 - Fri 2-3 (10:30 – 12:20):
 - <https://sunmoon.zoom.us/j/99600260189> (ID: 996 0026 0189)

Text Books (1)

■ 2nd Edition

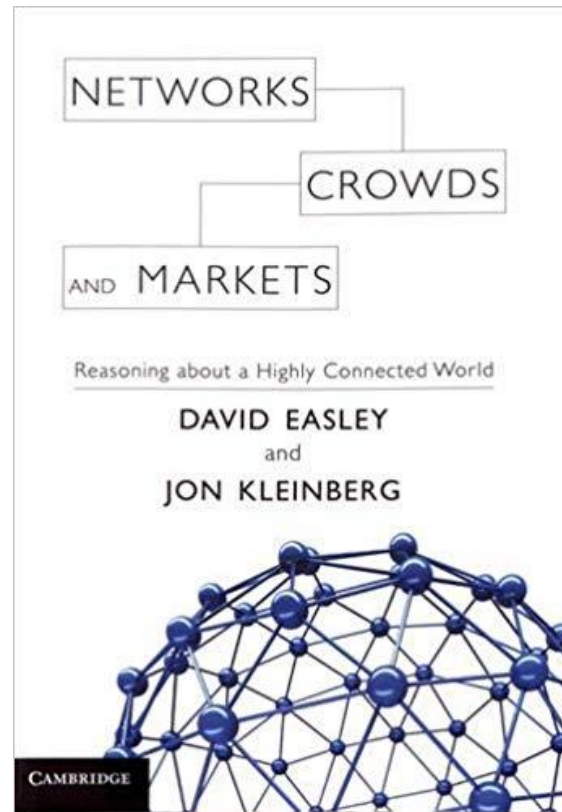


■ 1st Edition



Text Books (2)

- Auxiliary textbook
 - Available online



- Other reading lists will be provided during the course.

Prerequisites

- Background Knowledge
 - Basic Probability and Statistics
 - Basic Linear Algebra
 - Algorithms
- Programming
 - Can design and implement programs to complete logical tasks
 - Any programming languages are okay (e.g., Python, R, Java, C++).

Course Grading

- 중간고사 (30%)
- 팀프로젝트 (40%) – 기말고사 대체
 - 팀구성: 최대 3명
 - 자율주제 선정
 - 기말 보고서 및 최종발표
- 수업참여도 (20%)
 - 토론 참여 (타팀 발표후 건설적 피드백 제공 포함)
 - 실습 및 Quiz 풀이 참여
- 출석 (10%)
 - -1점/결석1시간, -1점/지각3시간
 - 실시간 원격 강의중 화면OFF: 결석으로 간주
 - 출석일수의 1/3이상 결석시 F학점

Q & A
