Lecture 10

CSE 331

Sep 18, 2019

Consent form information

note

stop following 98 views

Consent form information

As Alan mention in class today, he will be emailing you a link to the survey by tomorrow. In the meantime (and for your perusal later on), here is a link that gives you more background information about the survey (and the study):

https://github.com/atrirudra/ubcse-ethics/tree/master/IRB-approval

(I'll this post pinned till Tuesday next week.)
#pin

logistics feedback

edit · good note | 0

Updated 1 day ago by Atri Rudra

Mini Project choice due < 2 weeks

CSE 331 Mini project choices

Fall 2019

Please check the table below before submitting your mini project team composition to make sure your case study is not being used by another group. Case studies are assigned on a first come first serve basis.

Group	Chosen Algorithm	Case Study	Links
Daniel Shekhtman, William Nicholson, Andrew Quinonez (D's Get Degrees)	PageRank	PageRank	Link 1, Link 2, Link 3, Link 4
Jordan Clemons, Chris Burton, Christopher Perez (Group 1)	Pagerank**ALREADY TAKEN-- PLEASE CHOOSE ANOTHER CASE STUDY**	Google's use of Pagerank in sorting search results	Link 1, Link 2
Moulid Ahmed, Shrishty Shivani Jha, Shreya Lakhkar (ACE-MA)	Spotify Recommendation	Machine Learning Algorithm	Link 1, Link 2, Link 3
Justin Henderson, Hannah Wlasowicz, Judy Mei (PizzaTime)	Aes 256	ransomware	Link 1
Gillian Marcus, Jason Niu, Sharon Stack (2n^2 (//pls substitute caret for a superscript))	Deep Neural Networks for YT Recommendations	Social Media Targeted Advertising	Link 1, Link 2, Link 3, Link 4
Jiwon Choi, Matthew Ferrera, Winnie Zheng (The	Dijkstra's Algorithm	Maps/ Transportation Routes	Link 1, Link 2, Link

If you need it, ask for help

Implementation Steps

(0) How to represent the input?

(1) How do we find a free woman w?

(2) How would w pick her best unproposed man m?

(3) How do we know who m is engaged to?

(4) How do we decide if m prefers w’ to w?

Overall running time

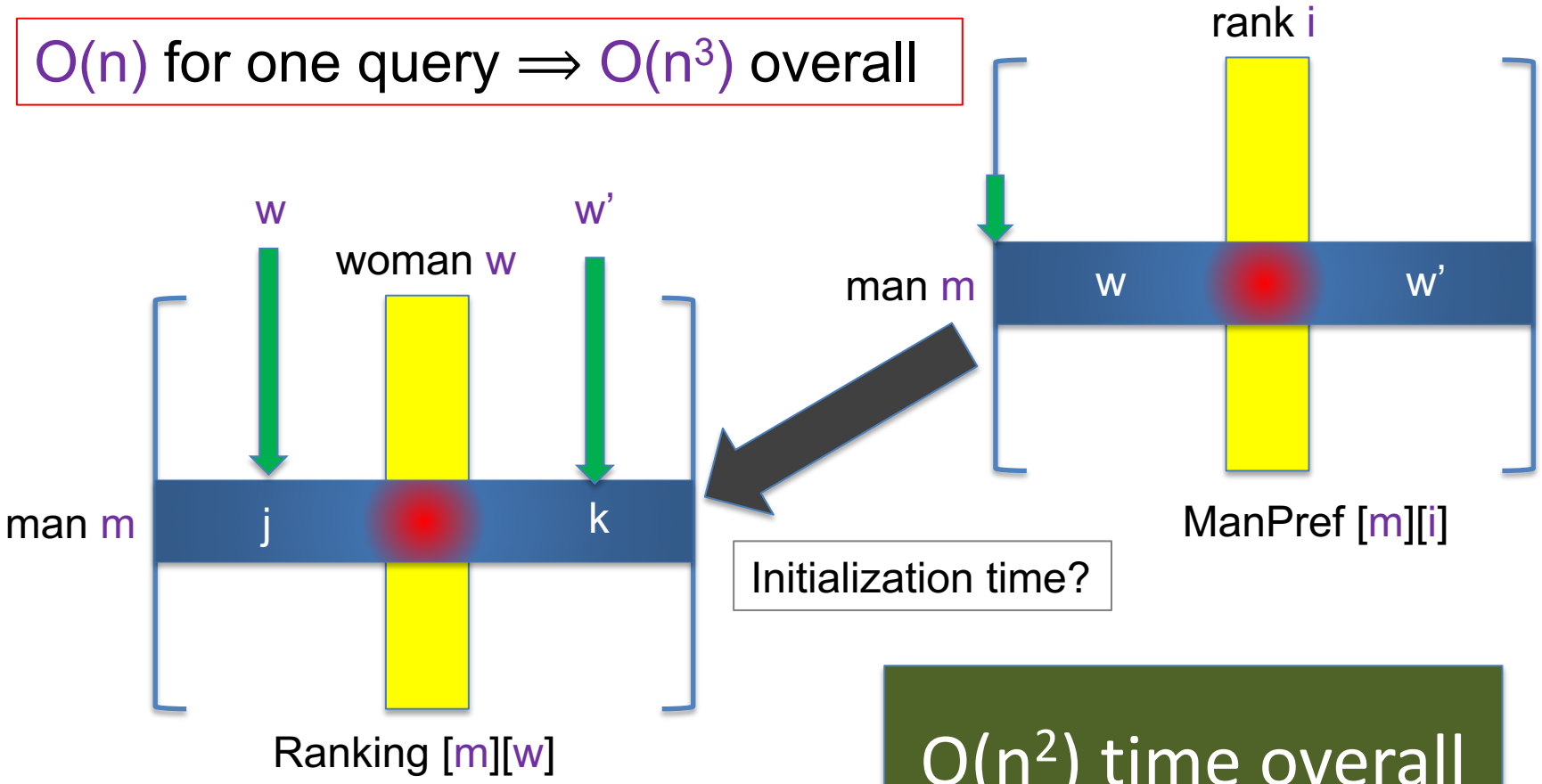
Init(1-4)

n^2 X (Query/Update(1-4))

Questions?

Answering Q4

O(n) for one query $\Longrightarrow$ $O(n^3)$ overall



$O(n^2)$ time overall

O(1) query time

(4) How do we decide if m prefers w' to w?

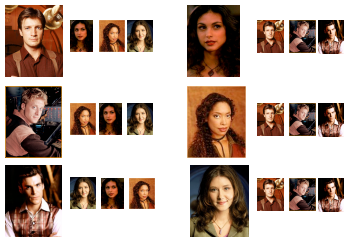
Puzzle

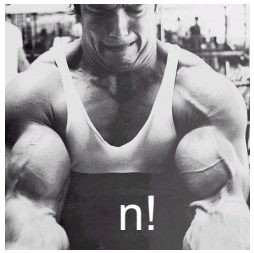
Prove that **any** algorithm for the SMP takes $\Omega(n^2)$ time

Main Steps in Algorithm Design

Problem Statement

Problem Definition





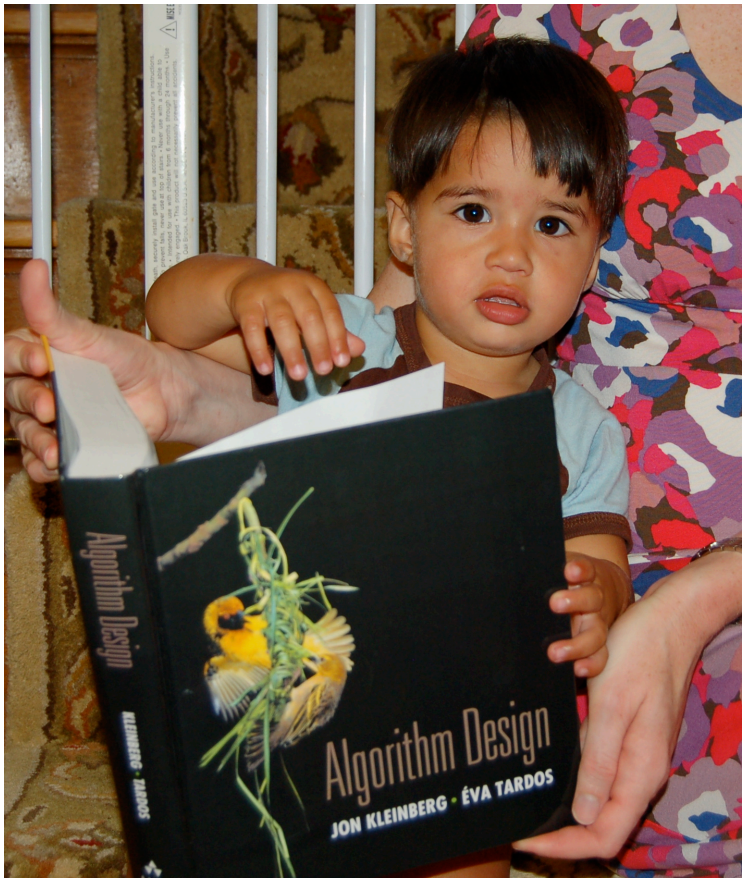
Algorithm

"Implementation"

Analysis

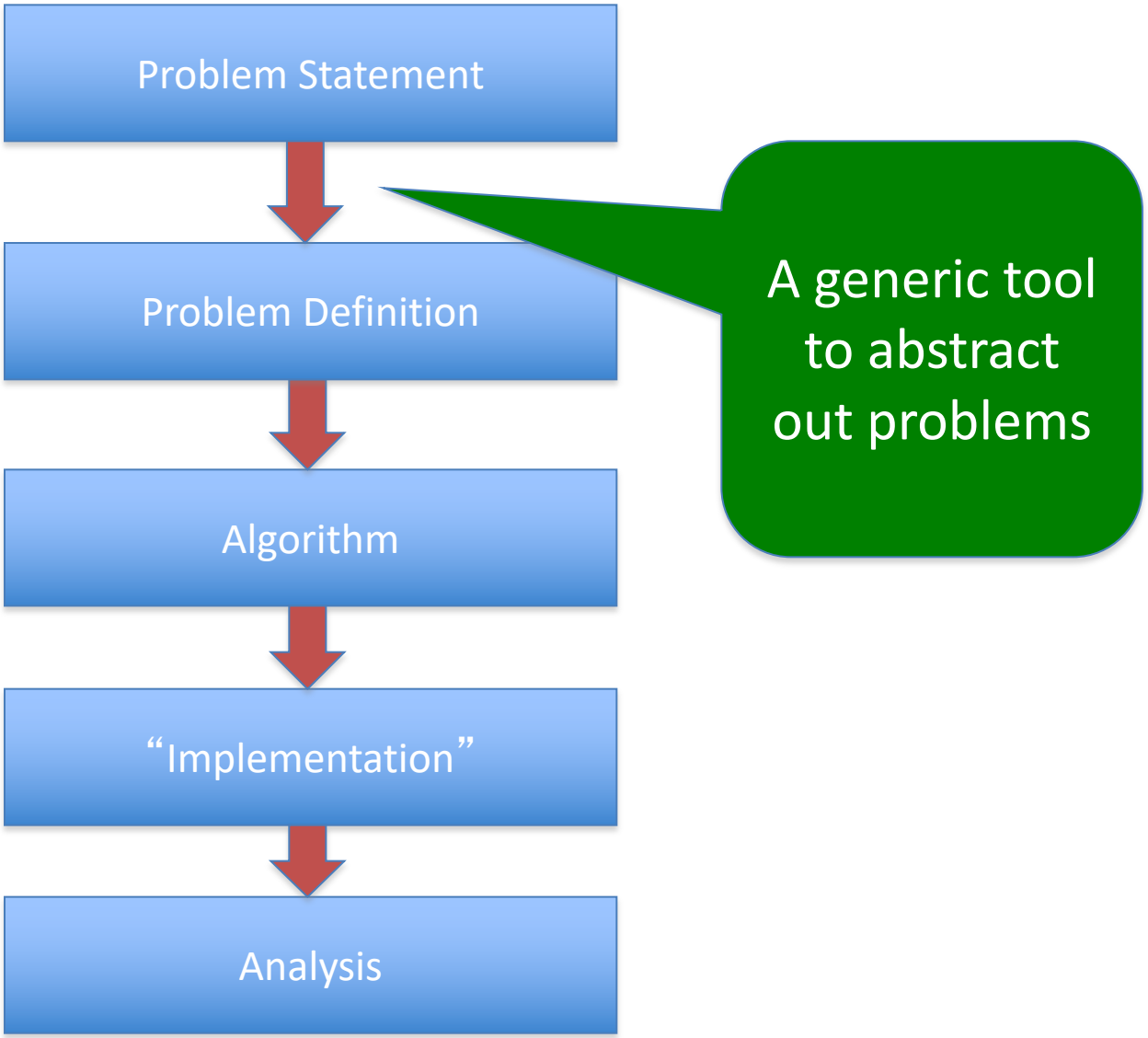
Correctness Analysis

Reading Assignments



Sec 1.1 and Chap. 2 in [KT]

Up Next….

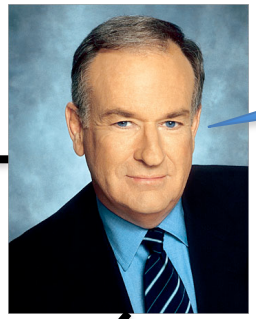

Problem Statement
Problem Definition
Algorithm
“Implementation”
Analysis
A generic tool to abstract out problems

Graphs

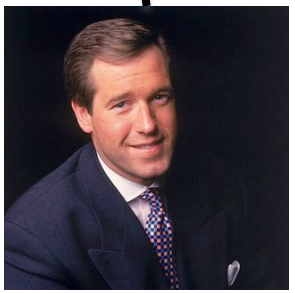
Representation of relation[illegible] Edge [illegible]airs of entities/elements

Entities: News hosts

Relationship: Mention in other's program



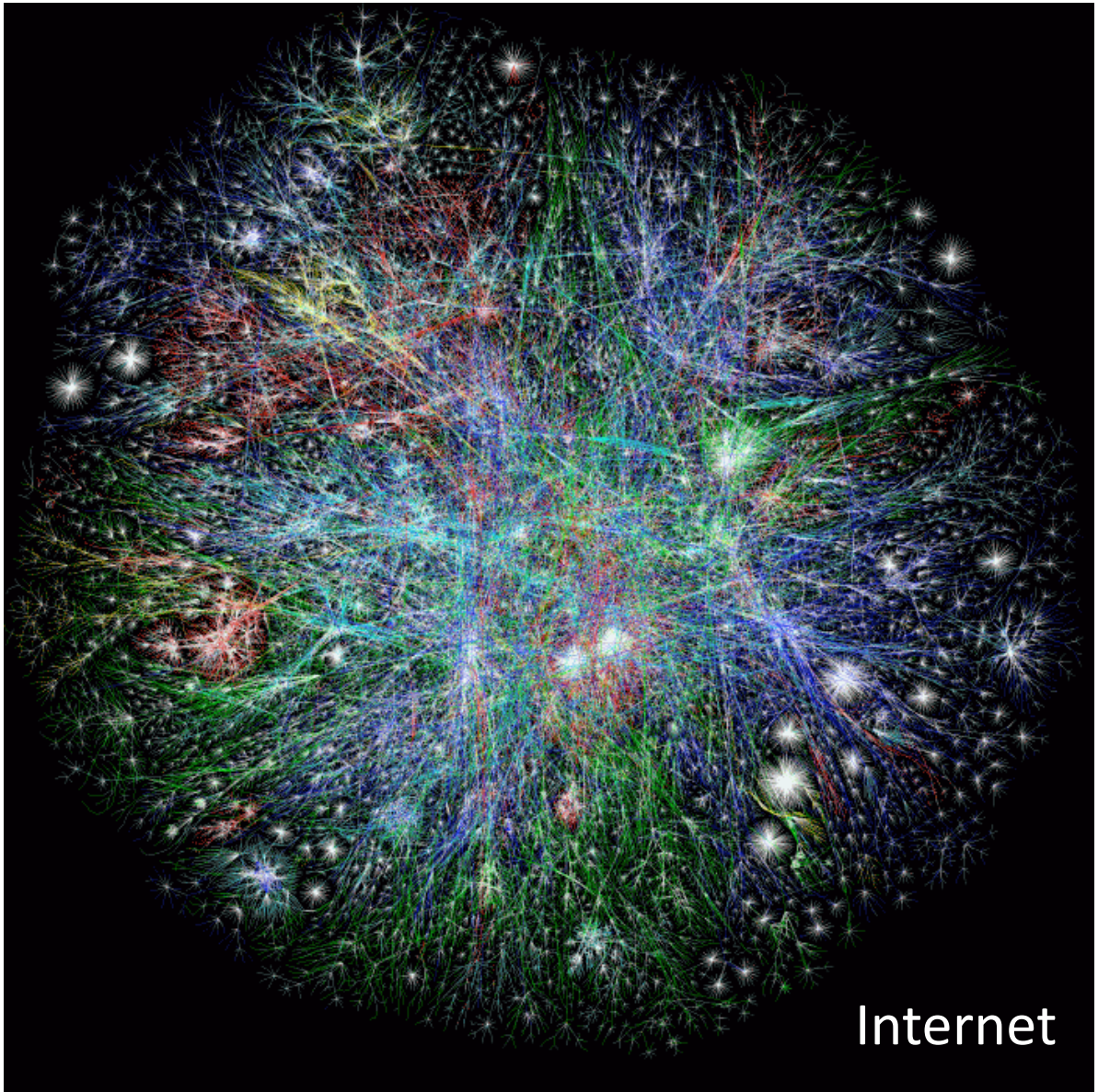
Vertex/Node



Graphs are omnipresent

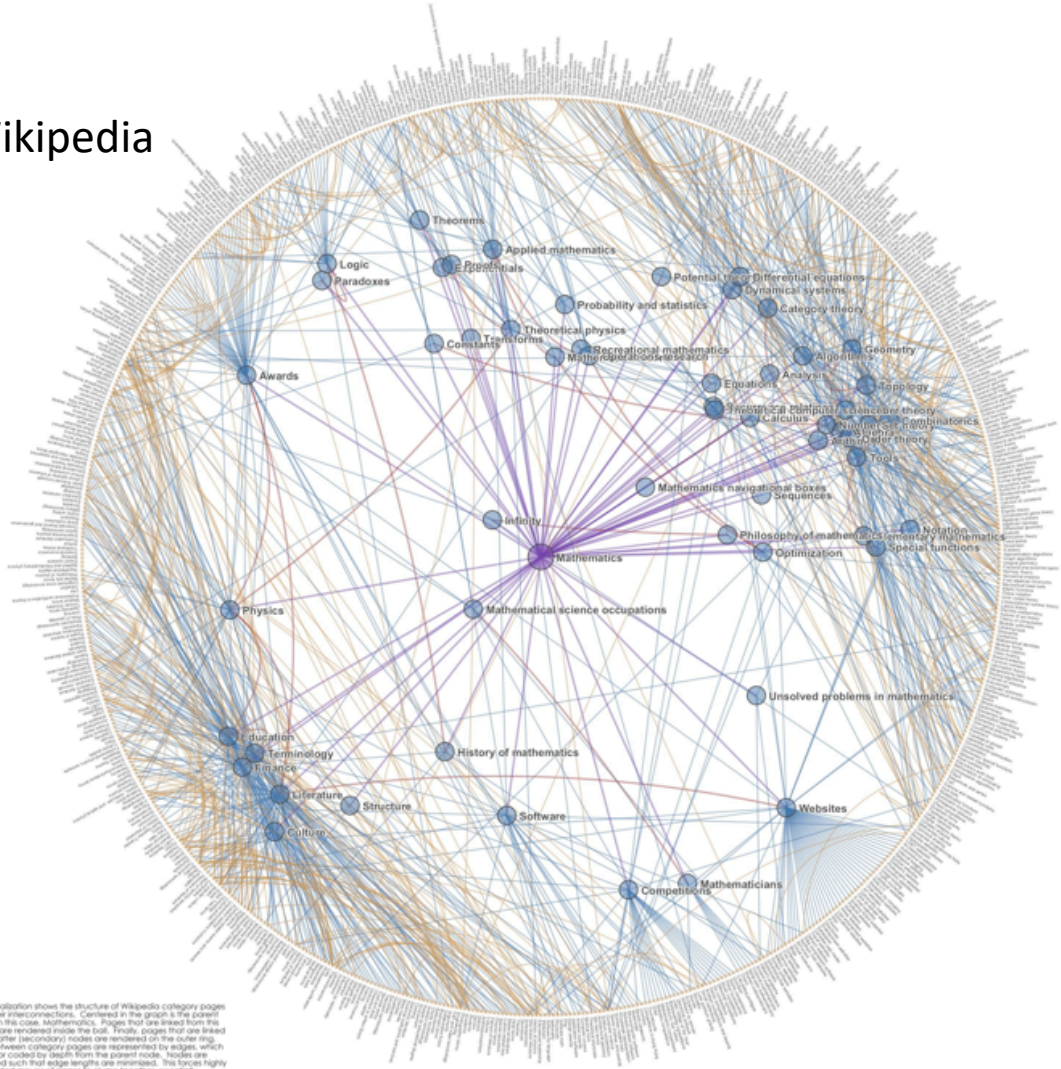
Airline Route maps

What does this graph represent?



And this one?

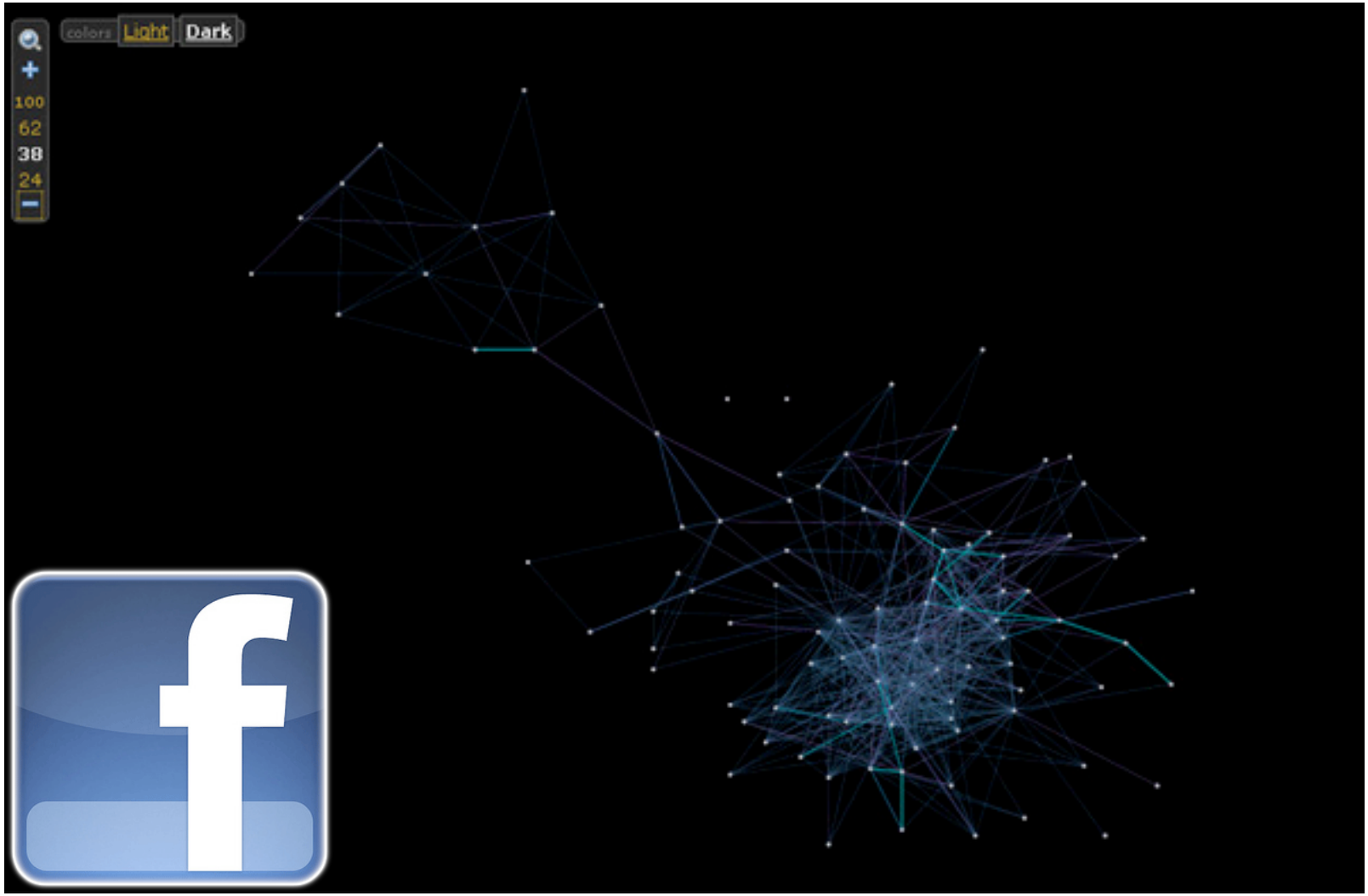
Math articles on Wikipedia



This visualization shows the structure of Wikipedia category pages and their interconnections. Centered in the graph is the parent node, in this case, Mathematics. Pages that are linked from this parent are rendered inside the ball. Finally, pages that are linked to the latter (secondary) nodes are rendered on the outer ring. Links between category pages are represented by edges, which are color coded by depth from the parent node. Nodes are clustered such that edge lengths are minimized. This forces highly connected groups of pages to clump together, essentially forming topical groups. Created by Chris Harrison, 2007.

ChrisHarrison.net

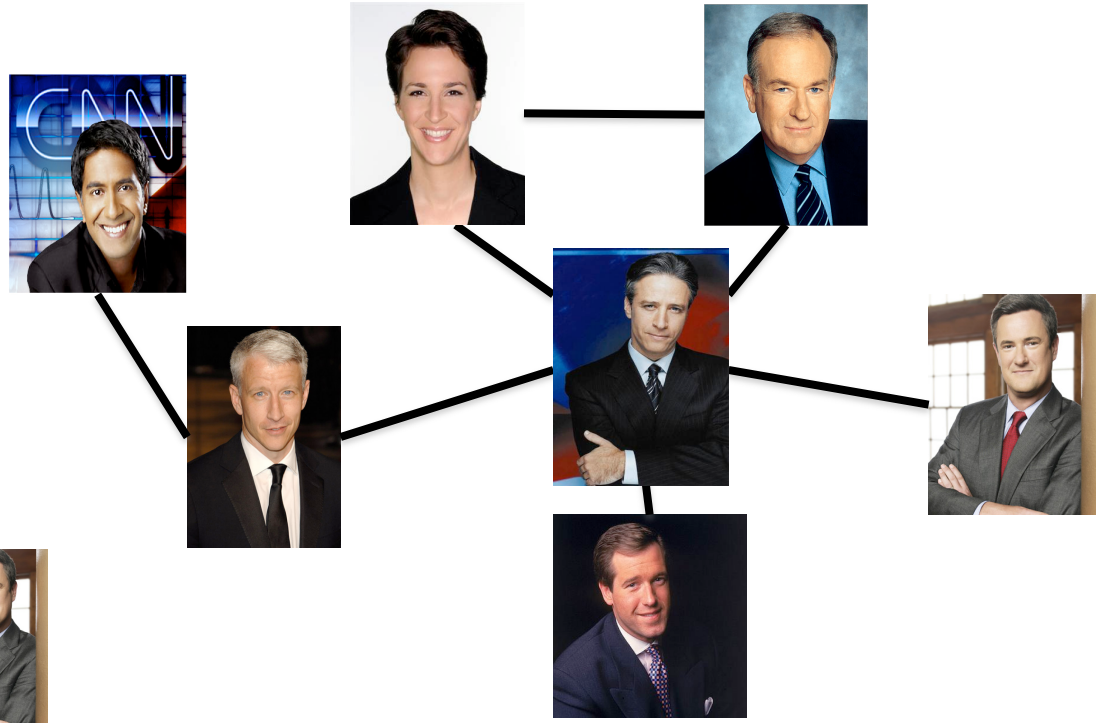
And this one?



Rest of today's agenda

Basic Graph definitions

Paths



Connected

Sequence of vertices connected by edges

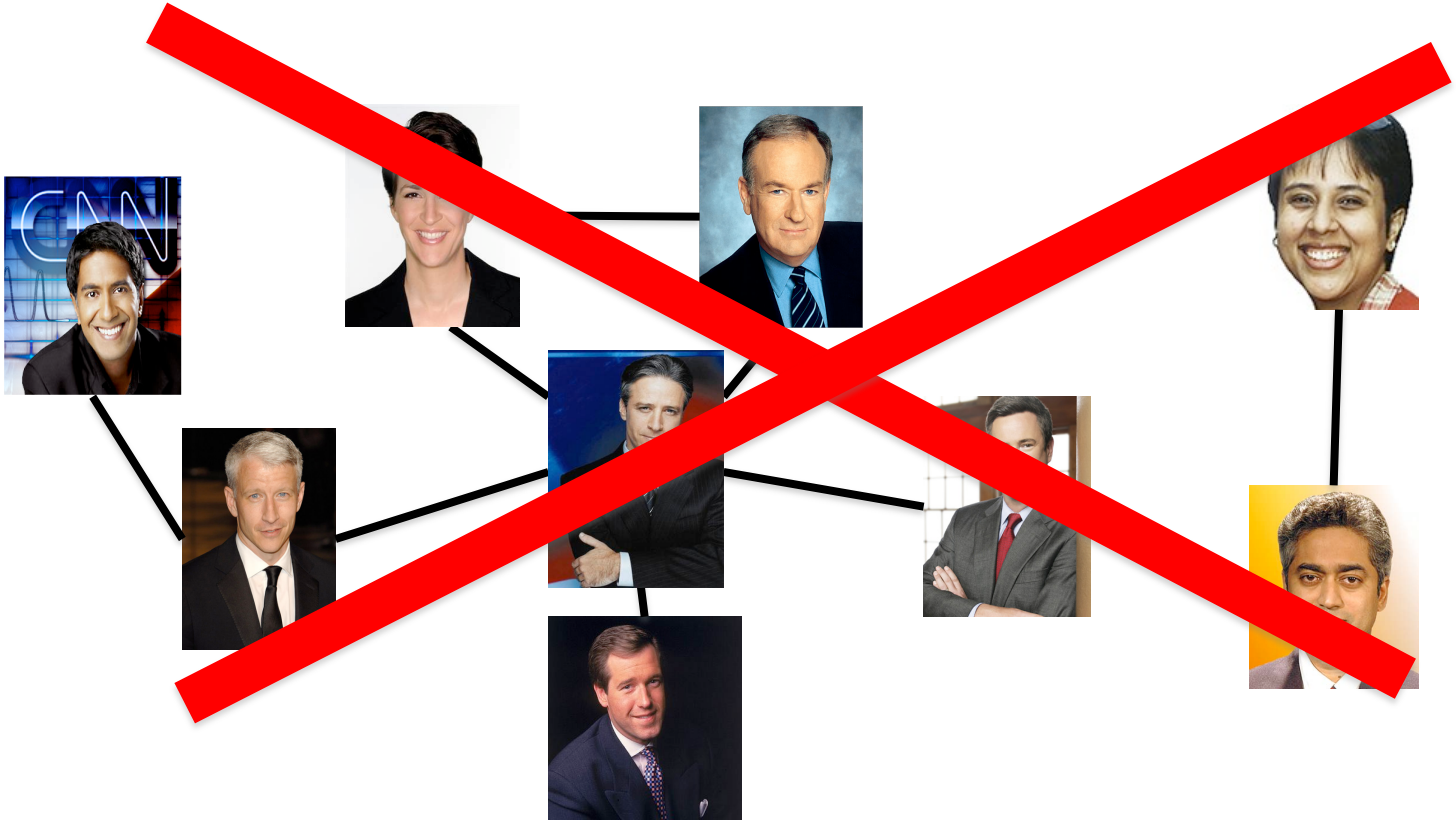
Path length 3

Connectivity

u and w are connected iff there is a path between them

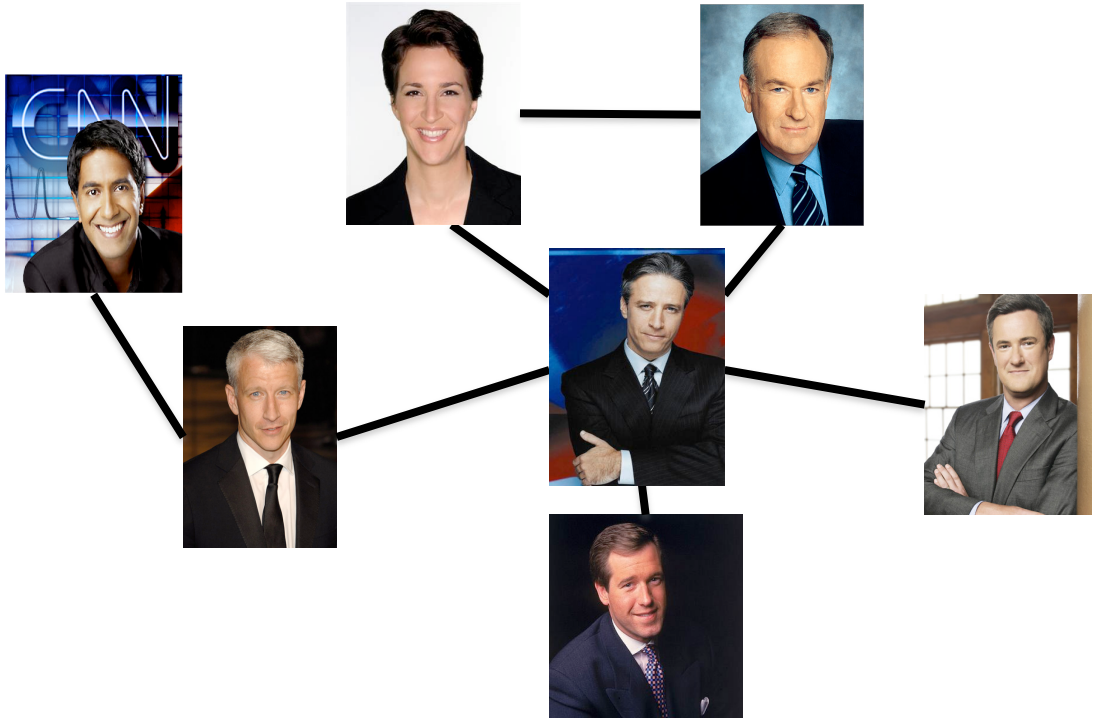
A graph is connected iff all pairs of vertices are connected

Connected Graphs

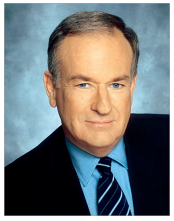


Every pair of vertices has a path between them

Cycles



Sequence of k vertices connected by edges, first k-1 are distinct

 ,  ,  , 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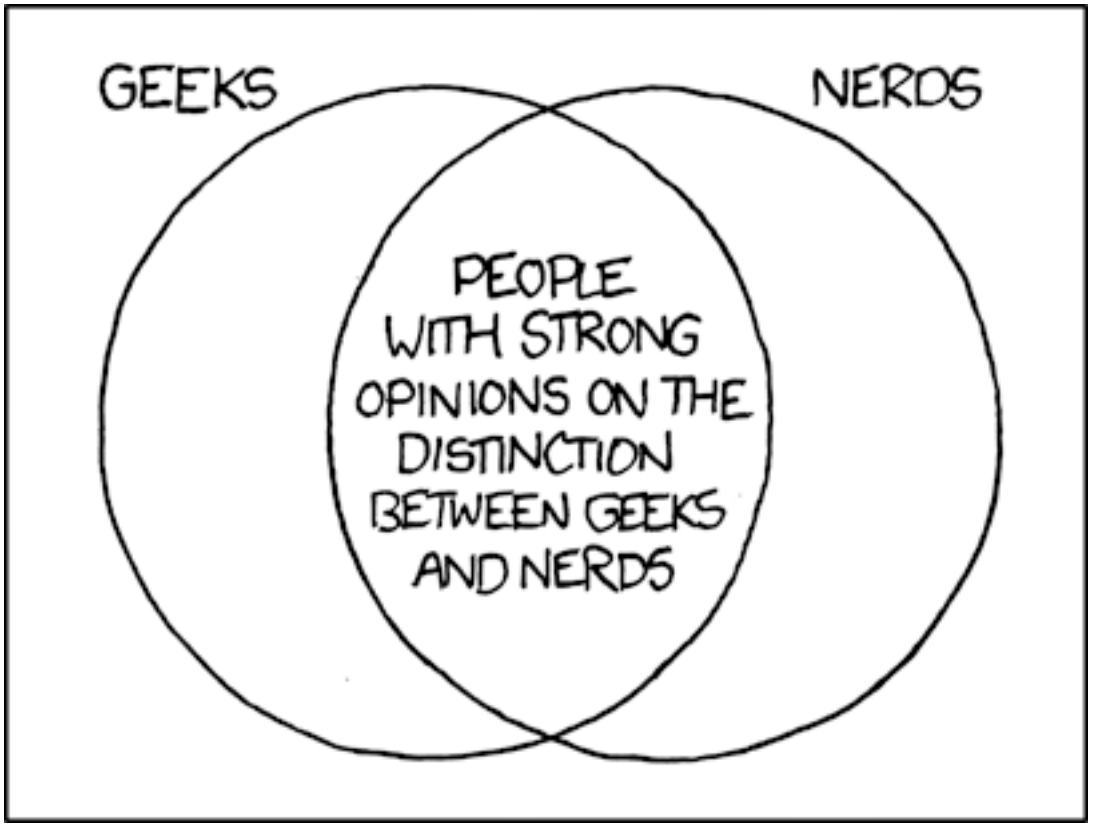
Formally define everything



http://imgs.xkcd.com/comics/geeks_and_nerds.png