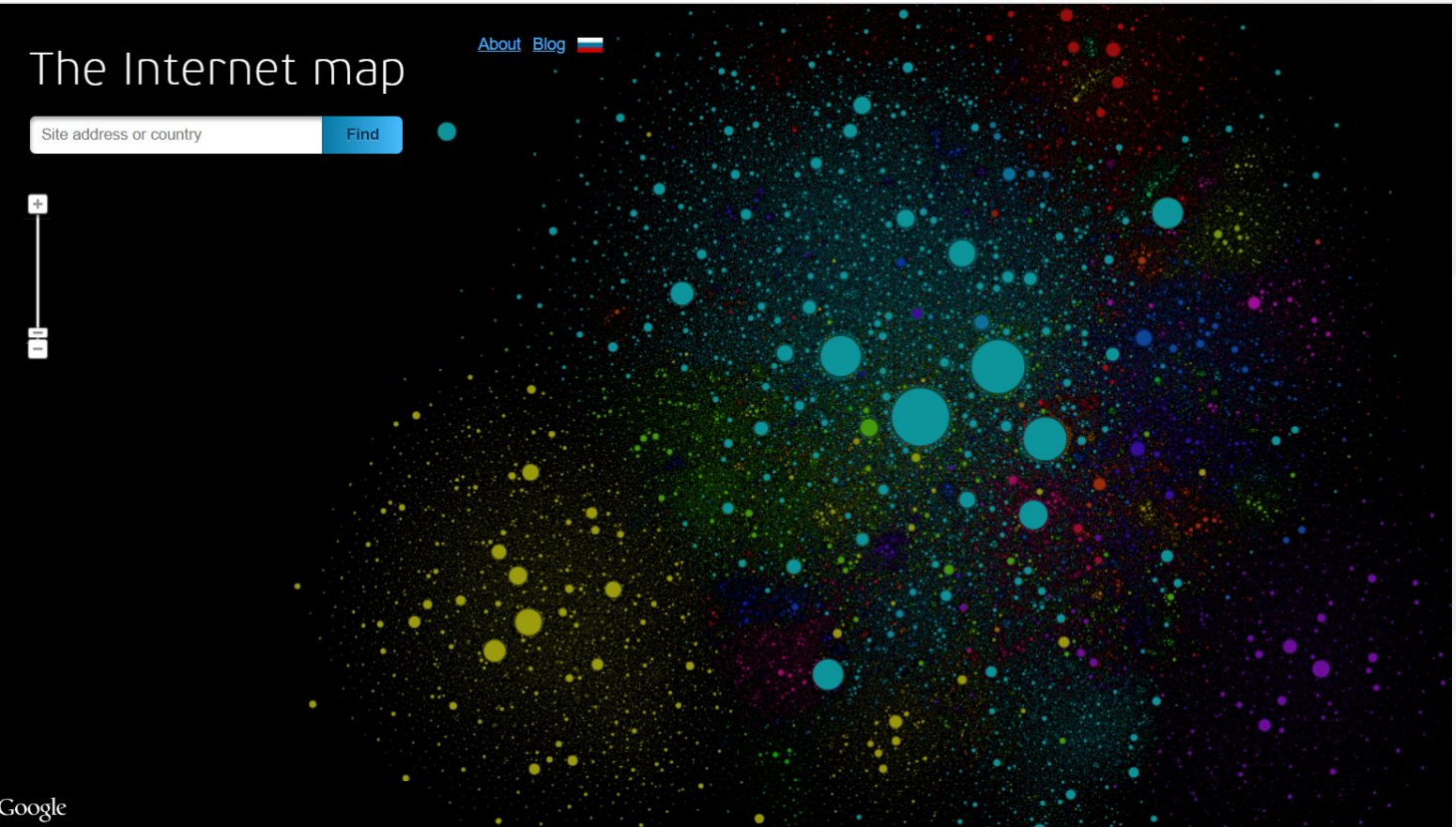
ILLINOIS

Graph Examples

Learning Objectives

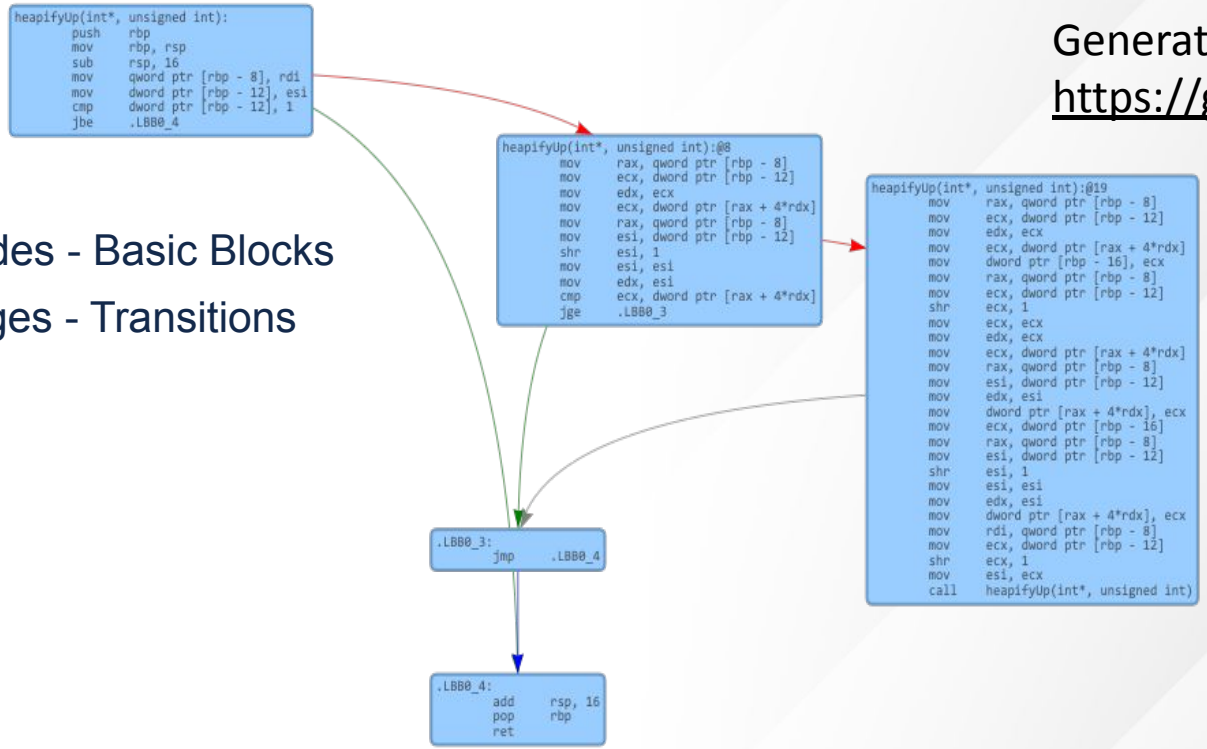
1. Describe various applications of graphs

Internet



Nodes are website
Edges are traffic

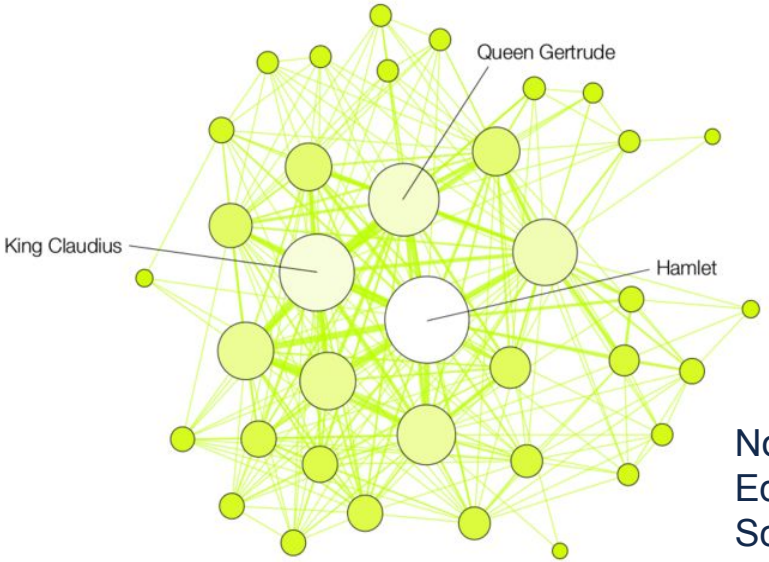
Compilers - HeapifyUp

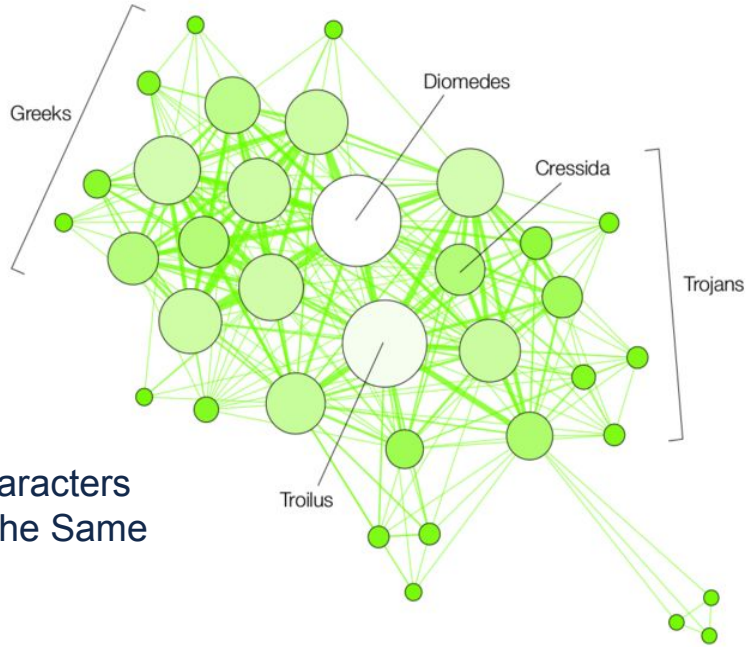


Nodes - Basic Blocks

Edges - Transitions

Generated using tools at https://godbolt.org





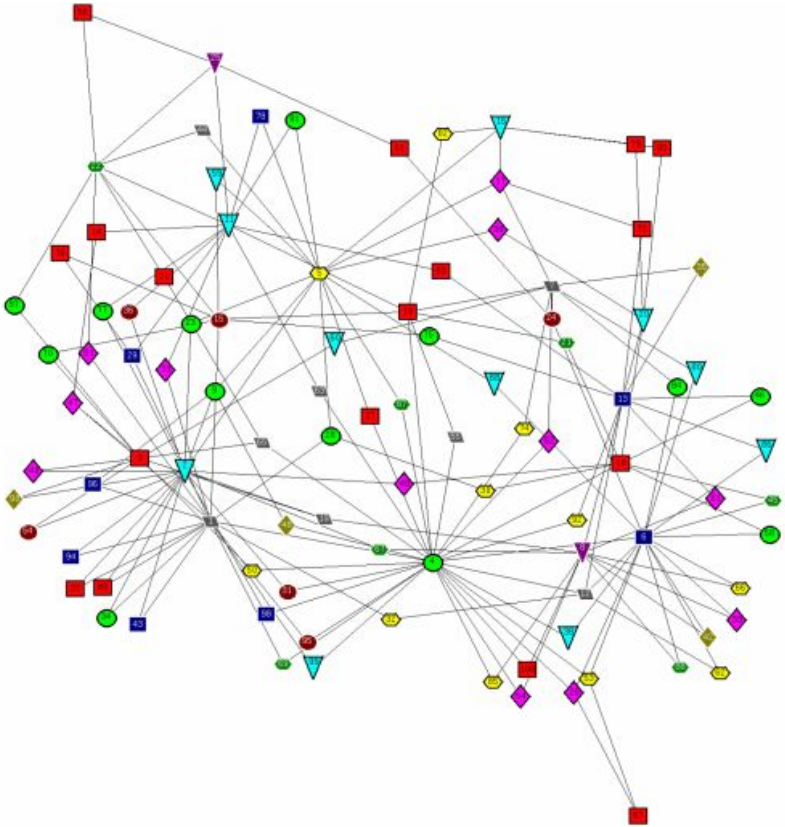
Nodes - Characters
Edges - In the Same Scene

HAMLET

TROILUS AND CRESSIDA

Who's the real main character in Shakespearean tragedies?
Martin Grandjean (2016)
https://www.pbs.org/newshour/arts/whos-the-real-main-character-in-shakespearen-tragedies-heres-what-the-data-say

Scheduling

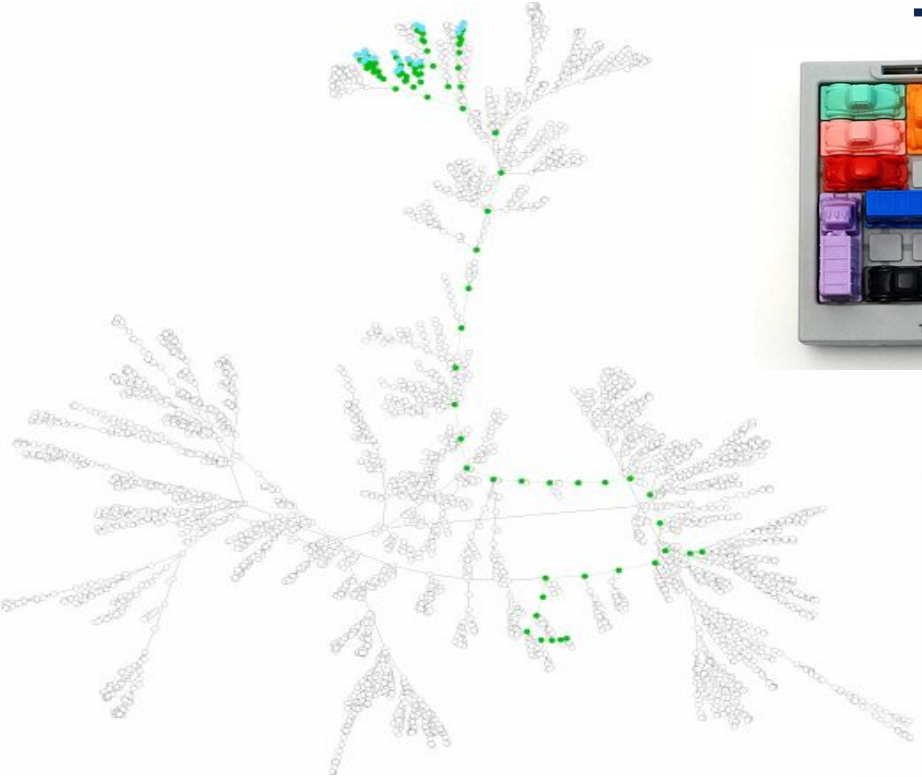


Conflict-Free Final Exam Scheduling Graph

Unknown Source

Presented by Cinda Heeren, 2016

Game States - Rush Hour



“Rush Hour” Solution

Unknown Source

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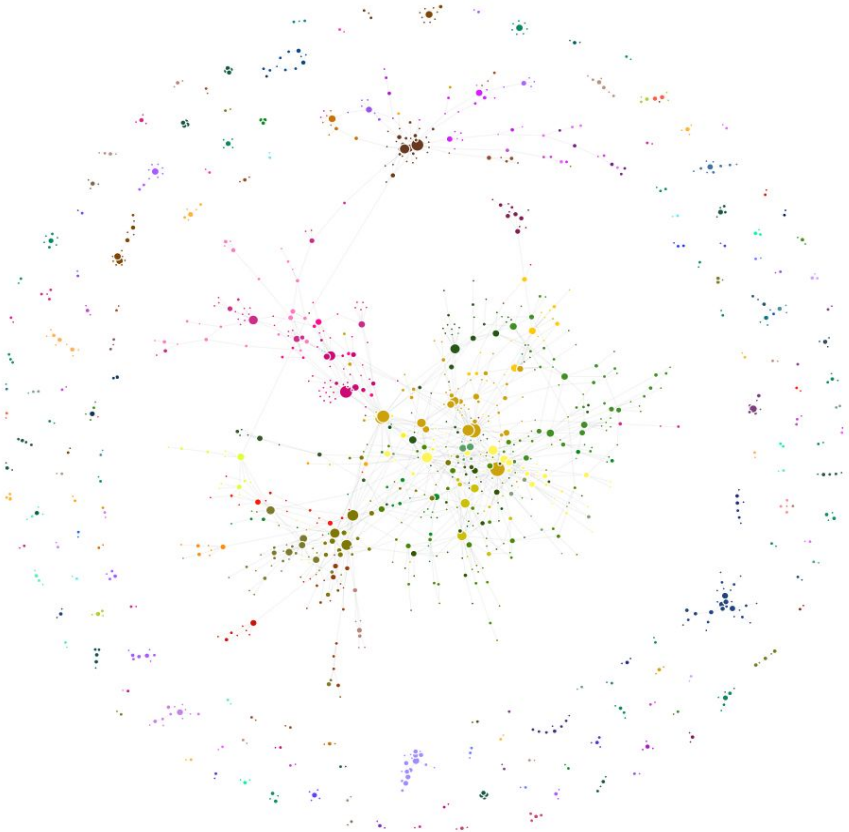
Class Requirements

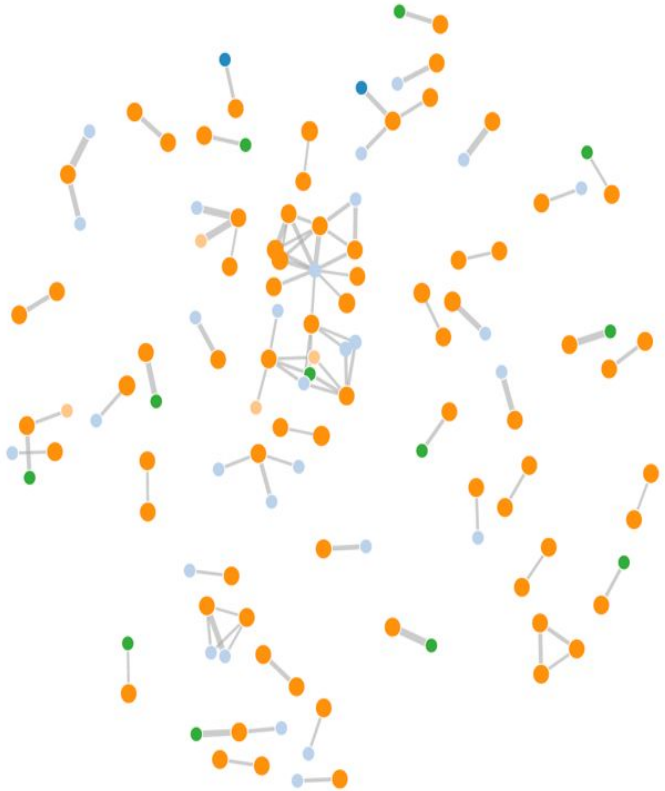


Class Hierarchy At University of Illinois Urbana-Champaign
A. Mori, W. Fagen-Ulmschneider, C. Heeren

Graph of every course at UIUC; nodes are courses, edges are prerequisites

http://waf.cs.illinois.edu/discovery/class_hierarchy_at_illinois/

MP Collaborations



MP Collaborations in CS 225

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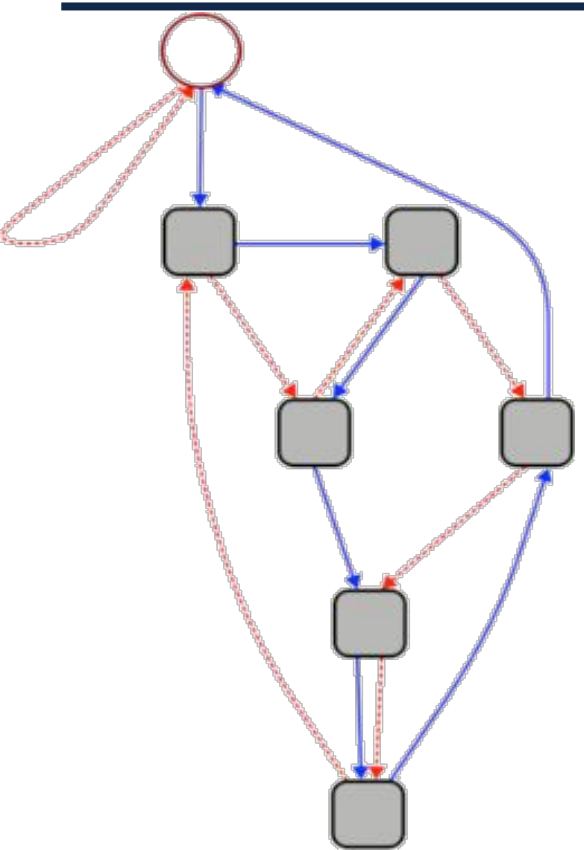
Math



This graph can be used to quickly calculate whether a given number is divisible by 7.

1. Start at the circle node at the top.
2. For each digit **d** in the given number, follow **d** blue (solid) edges in succession. As you move from one digit to the next, follow **1** red (dashed) edge.
3. If you end up back at the circle node, your number is divisible by 7.

3703

“Rule of 7”

Unknown Source

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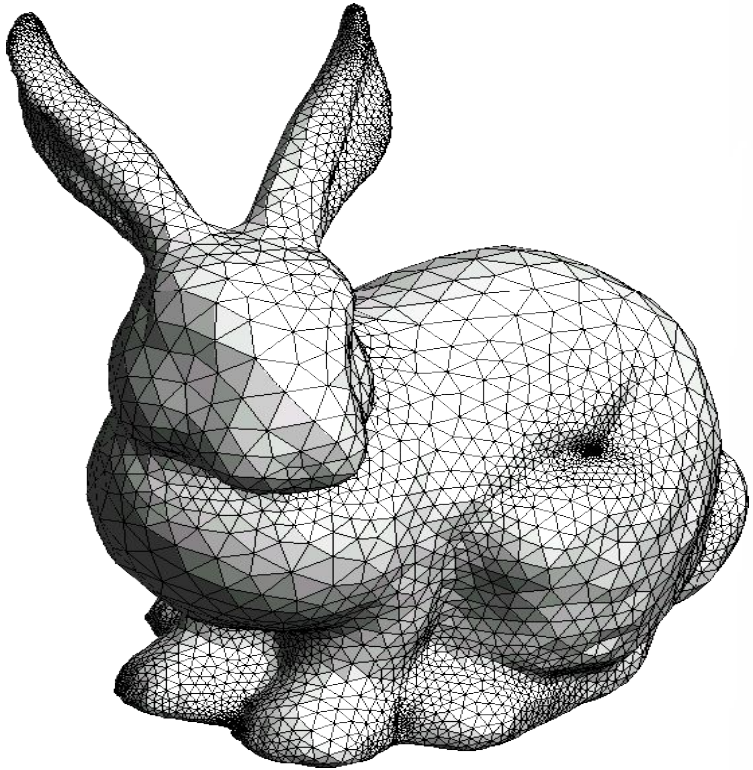
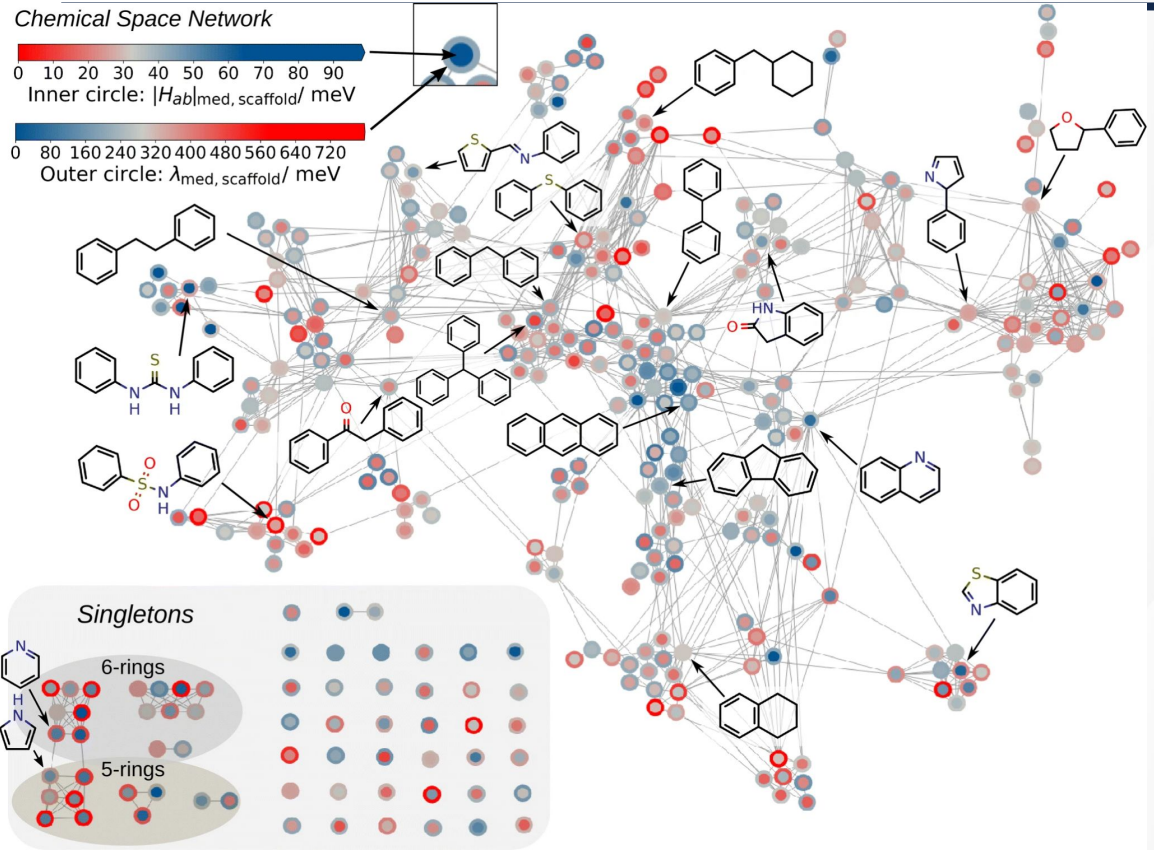
Object Representations



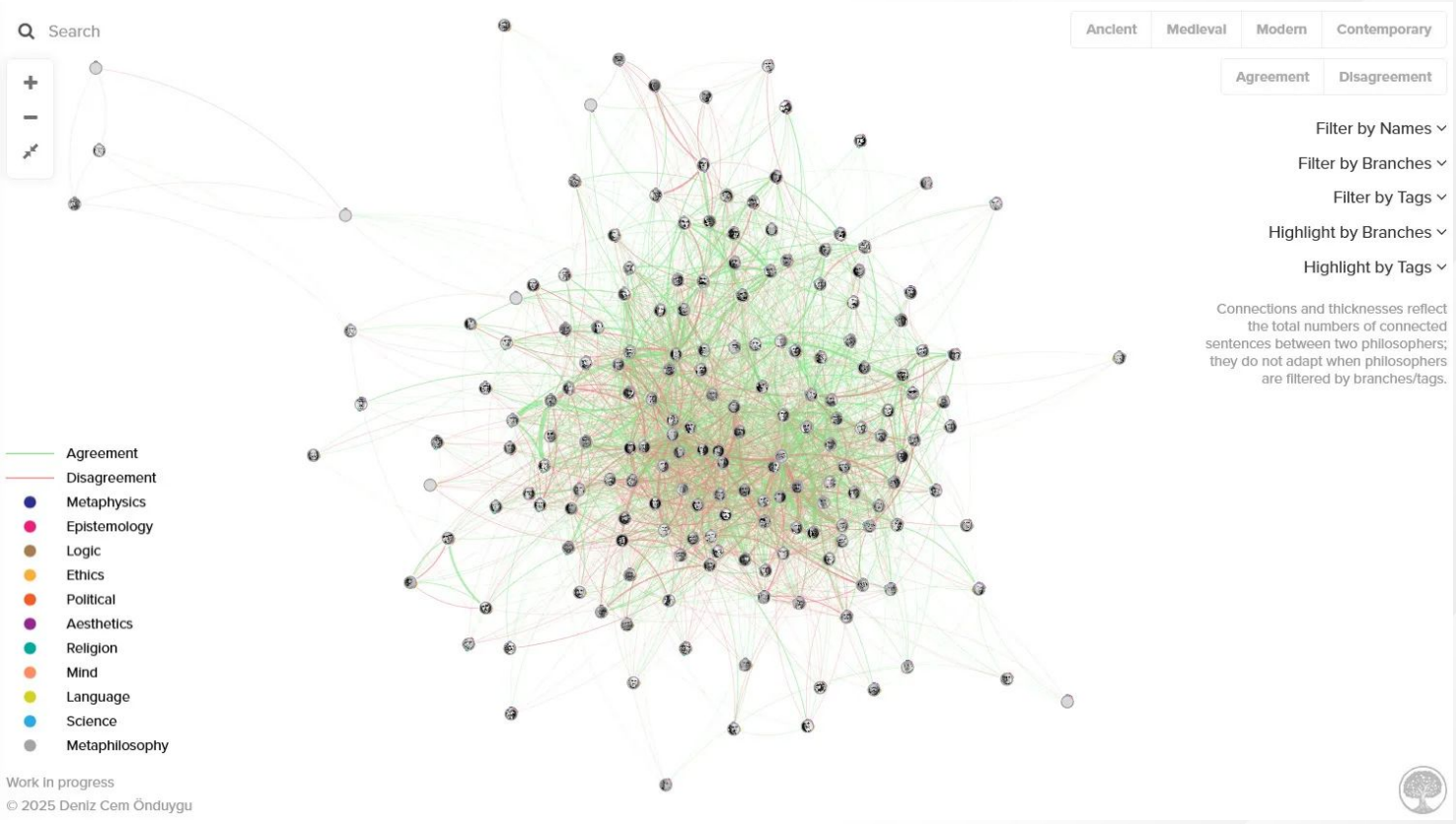
“Stanford Bunny”

Greg Turk and Mark Levoy (1994)

Chemical Space Networks



Philosophy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Agreement
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Filter by Tags
Highlight by Branches
Highlight by Tags
Connections and thicknesses reflect the total numbers of connected sentences between two philosophers; they do not adapt when philosophers are filtered by branches/tags.
Agreement
Disagreement
Metaphysics
Epistemology
Logic
Ethics
Political
Aesthetics
Religion
Mind
Language
Science
Metaphilosophy
Work in progress
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