Welcome

to

CSE 331

Please follow COVID-19 policies

COVID-19

COVID-19 related policies and guidelines

Please follow UB/SUNY protocols regarding COVID-19. This page has an overview of updates and policies ↗.

Specifically, please note that following parts of the Student Compliance Policy for COVID-19 Public Health Behavior Expectations ↗:

- Students are required to stay home if they are sick.
- Should a student need to miss class due to illness, isolation or quarantine, they are required to notify their faculty to make arrangements to make up missed work.
  - *Atri's note:* Please note though that since we drop the lowest two homeworks, there will be **no** extension/makeup for late homeworks. But we can schedule a makeup exam if you need to miss it due to medical reasons.

Lectures, recitations and exams will be held in-person. There will be a mix of in-person and virtual office hours. These are subject to change based on current UB/SUNY policies.

Let's do some introductions

TAs first
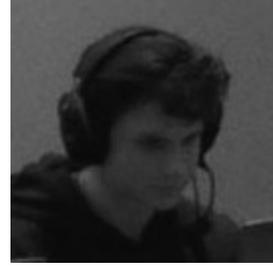

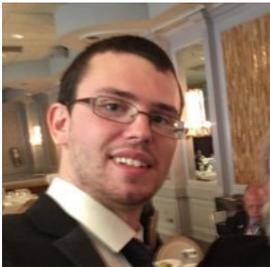Sebastian James Rachael Zachary Caleb Korey

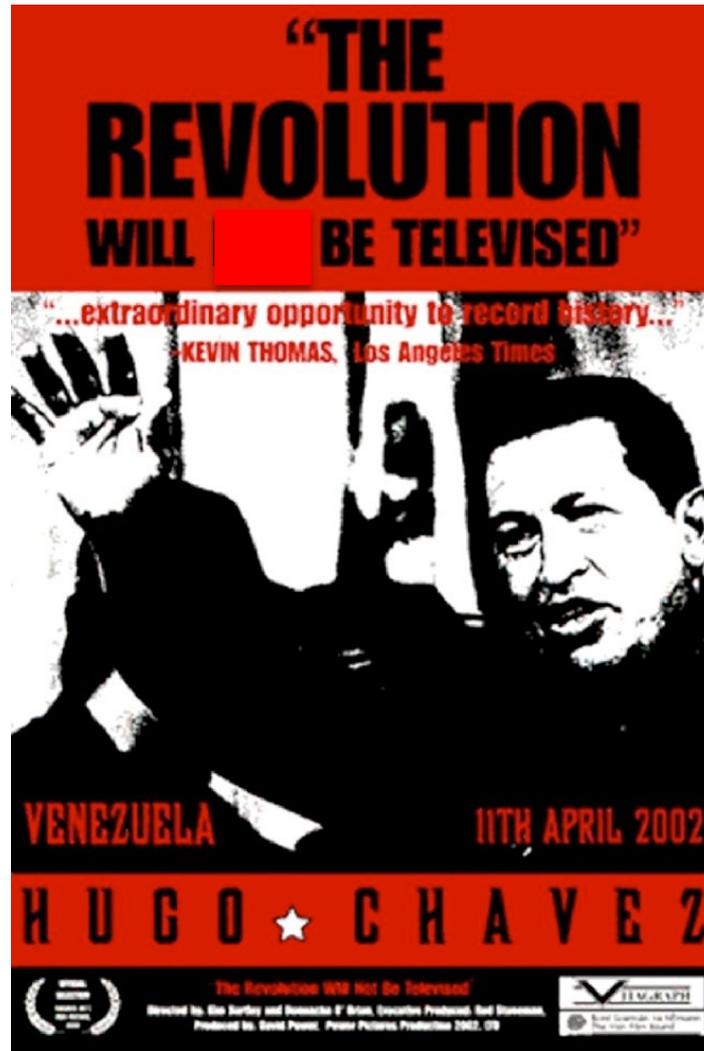Nick Michael Richard Hunter Trevor Ben Rrucha

Lectures will be videotaped

About Me

Atri Rudra

Just Atri please!

atri@buffalo.edu

Office: See piazza for location

Office hours: Wed 4:00-4:50pm; Fri, 12:30-1:20pm

OH start this Wed

Contact us all at

Or use piazza!

cse-331-staff@buffalo.edu

TAs will not respond to individual emails (except for re-grading requests)

CSE 331 in times of COVID

Lectures and recitations will be in-person

Office hours will be a mix of in-person and virtual locations

Exams and Quizzes will be in-person

Questions/Comments?

Handouts for today

Syllabus (online)

Homework Policy document (online)

One Stop Shop for the Course

CSE 331 | Syllabus | Piazza | Schedule | Homeworks ▾ | Autolab | Project ▾ | Support Pages ▾ | ▶ channel | Sample Exams ▾

CSE 331

Fall 2022

http://www-student.cse.buffalo.edu/~atri/cse331/fall22/index.html

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This page is still under construction. In particular, nothing here is final while this sign still remains here.

CSE 331 events

Today ◀ ▶ Aug 21 – 27, 2022 ▾   🖶 Print **Week** Month Agenda ▾

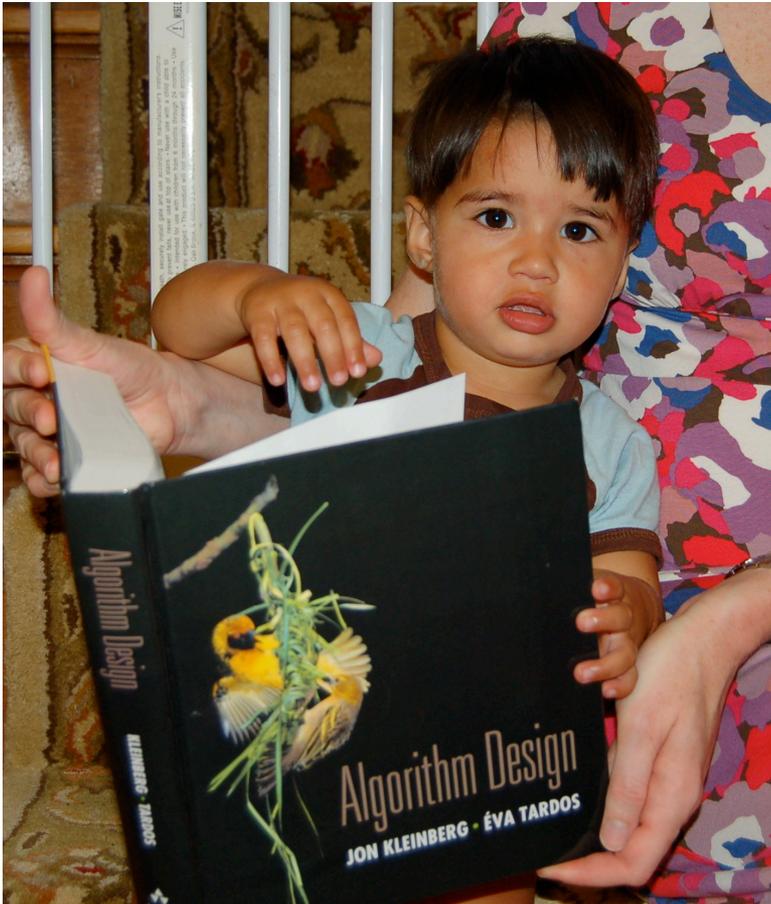|	Sun 8/21	Mon 8/22	Tue 8/23	Wed 8/24	Thu 8/25	Fri 8/26	Sat 8/27
8am							
9am							
10am							
11am							
12pm							
1pm							

Three things to remember

WORK HARD!

DO NOT CHEAT!

READ CAREFULLY!

Wait.. What???

Make sure you follow submission instructions

Two most common ways of losing points

Make sure you read problem statements carefully

Advice from 331 TAs

CSE 331 Advice from TAs

Where students who took CSE 331 and became TAs share their experiences of how to fully utilize the class to your advantage. (And no, Atri did not pay them to say these things.)

http://www-student.cse.buffalo.edu/~atri/cse331/support/advice/index.html

⚠ Under Construction
This is a living document that will get updated over time. However, all the advice below is valid and you should pay attention to them!

The class is structured to your advantage

Utilize the before, during and after aspects of the course to their fullest.

Do the assigned readings before coming to class and if you get time even watch lecture videos from previous years. Atri will give you plenty of time during lecture to ask questions about the readings or the lecture itself. And of course get the most out of the assignments (Explained further below).

The assignments are separated into different parts for your convenience.

Questions 1 and 2

For Q1 and Q2, think of the algorithm and proof ideas as things that go inside a header (.h) file. They are the high level overview of how you are approaching the problem you don't

Academic Dishonesty

All your submissions must be your own work

Penalty:

    Minimum: A **grade reduction in course**

    Possible: **F** (or higher penalty) if warranted

YOUR responsibility to know what is cheating, plagiarism etc.

    If not sure, come talk to me

Excuses like "I have a job," "This was OK earlier/in my country," "This course is hard," etc. **WON'T WORK**

I DO NOT HAVE ANY PATIENCE WITH ANY CHEATING :
YOU WILL GET A GRADE REDUCTION IN THE COURSE
FOR YOUR FIRST MISTAKE

Read the syllabus CAREFULLY!

Syllabus Quiz

Options	
View handin history	
View writeup	
Download handout	

🕐 Due: **December 13th 2022, 11:59 pm**

📅 Last day to handin: **December 13th 2022, 11:59 pm**

No graded material will be handed back until you pass the syllabus quiz!

Academic Integrity

Question 1: Sharing my answers to this syllabus quiz with other 331 students

○ Is OK if I do it to help out a friend

○ It does not matter since there is no grade attached with it

○ Is an academic integrity violation and should not be done

○ Is an academic integrity violation but I can take the chance

Question 2: Penalty for academic violation in CSE 331 is an automatic

○ warning and a chance to make-up

○ A zero in the assignment AND a letter grade reduction (for first violation across all CSE courses) and an F in the course (for 2nd violation across all CSE courses)

○ A zero in the corresponding assignment and nothing else

More information on the quiz

CSE 331 Syllabus

Algorithms and Complexity

Fall 2022

Time and location: **Mondays, Wednesdays** and **Fridays, 11:00-11:50am**, **NSC** ☐ **215**.

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Please note

It is **your responsibility** to make sure you read and understand the contents of this syllabus. If you have any questions, please contact the instructor.

Acknowledgment

Once you have read the syllabus carefully, please fill in the Syllabus quiz on Autolab. As an incentive for you to fill in this form, **you will not receive any feedback on your assignments till you successfully answer AT LEAST 18 out of the 20 questions in the quiz**. (You can attempt the quiz as many times as you want.) Note that in addition to this syllabus, the quiz will also ask questions based on the homework policies.

Autolab

https://autograder.cse.buffalo.edu/

You can submit the following now

If you were registered by 4pm on Monday, Aug 22 you should be on Autolab

Grading break-down

Grading Policy

Here is the split of grades:

Course Component	% of grade
Project	10%
Homeworks	30%
Quizzes	3%
Exams	57%

Questions/Comments?

Pre-requisites

Required (officially)

CSE 250, [CSE 191 or MTH 311] and MTH 142

At least a C- (this is recommended)

Required (for practical purposes)

Comfort with proofs

Willingness to work hard!

Accessibility Resources

Information included in the syllabus

In short, let me know and consult with Accessibility Resources

Preferred Name

If you prefer using name diff from UB records

Let me know and we'll make a note of it.

Critical Campus Resources

Sexual Violence

UB is committed to providing a safe learning environment free of all forms of discrimination and sexual harassment, including sexual assault, domestic and dating violence and stalking. If you have experienced gender-based violence (intimate partner violence, attempted or completed sexual assault, harassment, coercion, stalking, etc.), UB has resources to help. This includes academic accommodations, health and counseling services, housing accommodations, helping with legal protective orders, and assistance with reporting the incident to police or other UB officials if you so choose. Please contact UB's Title IX Coordinator at 716-645-2266 for more information. For confidential assistance, you may also contact a Crisis Services Campus Advocate at 716-796-4399.

Mental Health

As a student you may experience a range of issues that can cause barriers to learning or reduce your ability to participate in daily activities. These might include strained relationships, anxiety, high levels of stress, alcohol/drug problems, feeling down, health concerns, or unwanted sexual experiences. Counseling, Health Services, and Health Promotion are here to help with these or other issues you may experience. You can learn more about these programs and services by contacting:

Counseling Services

120 Richmond Quad (North Campus), 716-645-2720

Health Services

4350 Maple Road (at Sweet Home Rd.) , 716-829-3316

Health Promotion

114 Student Union (North Campus), 716-645-2837

TA Office hours

YOU decide!

TA office hours

Please select all the time slots below that you will able to attend (even if for part of the time) for TA office hours. If you do not have preference for in-person vs. virtual please pick BOTH options (but if you have a strong preference please pick the in-peron or virtual option). Recall that homeworks are due on Tuesdays at 11:30pm.

We will pick the top 29 choices at the end of Thursday (subject to TA availability) for the TA office hours.

Please note that the TA office hours start Tuesday of 2nd week of class (i.e. from Tue, Sep 7).

☐ Mondays, 9-10am (in-person)
☐ Mondays, 9-10am (virtual)
☐ Mondays, 10-11am (in-person)
☐ Mondays, 10-11am (virtual)
☐ Mondays, 12-1pm (in-person)
☐ Mondays, 12-1pm (virtual)
☐ Mondays, 1-2pm (in-person)
☐ Mondays, 1-2pm (virtual)
☐ Mondays, 2-3pm (in-person)
☐ Mondays, 2-3pm (virtual)
☐ Mondays, 3-4pm (in-person)
☐ Mondays, 3-4pm (virtual)
☐ Mondays, 4-5pm (in-person)
☐ Mondays, 4-5pm (virtual)
☐ Mondays, 5-6pm (in-person)
☐ Mondays, 5-6pm (virtual)

Late night office hour

YOU decide!

Actions ▾

Late night office hour

(For TA office hour slots, please vote in @8)

This year, I plan to have night office hours in CSE 331. Note that these are in addition to my Monday and Friday office hours.

These will be **virtual only**.

We will pick the most popular slot at the end of Thursdays (these will start from the week of Sep 8).

Some comments:

- These office hours are meant for general chat related to CSE 331. The other 331 office hours will be one-on-one but these office hours are meant to be communal ones where we can talk about anything related to CSE 331.
- By default we will *not* discuss your specific HW solutions since those are supposed to be for one-on-one office hours.
- This is not certain yet, but if there is a TA present as well, then they will be able to answer questions related to your specific questions.
- I realize the night times might not work for all of you so to make sure you do not miss out because of your schedule, *these office hours will be recorded* and I will post the link on piazza.

☐ Wednesdays, 9:30pm-10:30pm
☐ Wednesdays, 10:00pm-11:00pm
☐ Thursdays, 9:30pm-10:30pm
☐ Thursdays, 10:00pm-11:00pm

Submit

You have not yet voted

Recitations

Are on for this week!
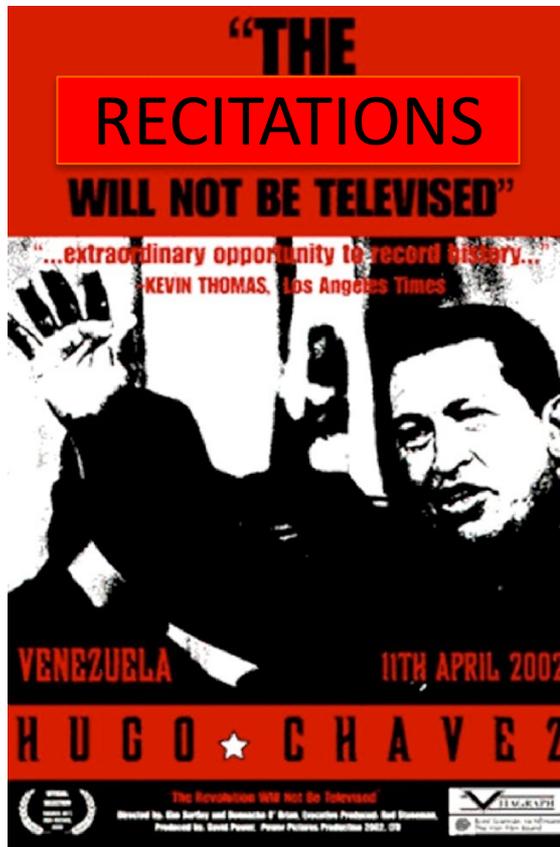
Please stick to your recitation section

At least for the first month since all sections are full

Exams

Mid term (two parts)

Mon, **Oct 10** and Wed, **Oct 12**, 2021. Usual place

Sukkot
Unfortunately, the mid-term dates conflict with Sukkot. If this conflict will prevent you from taking the mid-term exam(s), please contact Atri at the start of the semester to schedule a makeup exam. The makeup exam will most likely be held before the in-class exam (this is the default rule for makeup exams in CSE 331).

Final exam

Fri, **Dec 12**, 2021. NSC 215, **12:00-2:30pm**

The HW structure

Three questions

DROP lowest
TWO Q1, Q2,
Q3 scores

Q1 and Q2 are proof based while Q3 is programming

Q1 worth 50 points

The hard proof based Q2 and programming Q3 worth 25 points each

HWs due by 11:30pm on Tuesdays

~2 month long project!

Individual Component

At the end of the project, you will rate your own and your other group member's contribution to the project. For more details, please see the project page.

Individual Component Grade

The individual component of your project will be worth 5% of your grade.

Surveys to Individual component of project grade

Your survey scores will be converted into a fractional score $\rho \in [0, 2]$. We will reveal the exact algorithm after the surveys are submitted but roughly if everyone in the group did equal work (as reflected by the survey responses), then all group members will have $\rho = 1$. Otherwise, those that did more work will have a ρ value closer to 2 and those that did less will have ρ value closer to 0.

The survey part of the grade will be calculated as $\rho \cdot$ `group score`, where `group score` is the sum of the coding and reflection components. If this score exceeds 5%, it will be capped at 6%.

Acknowledgment

The development of this project was supported by a Mozilla Responsible Computer Science award ↗. The support is gratefully acknowledged.

Project has three parts

Your project will have three parts:

1. Do five **programming problems** that involves making tradeoffs between various choices among which some have ethical dimensions. This will be a group assignment.
2. Each programming question will be paired with (a series of) **reflection questions** that involves you writing down and reflecting on some of the design decisions you made in the corresponding programming problem. In particular, these questions will ask you to reflect on the societal and ethical implications of your decisions. This will also be a group assignment.
3. At the end of the project, each group member will fill in a **survey** rating their own and their other group member's contribution to the project.

C++ vs Java/Python

Use Java/Python if as you just as comfortable with as C++
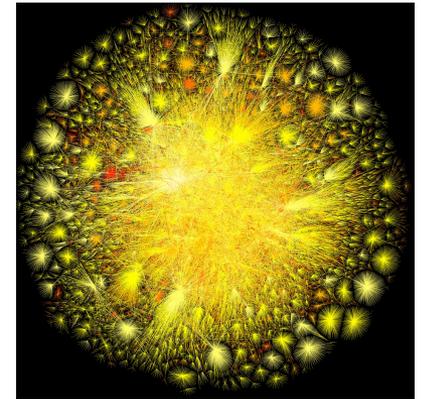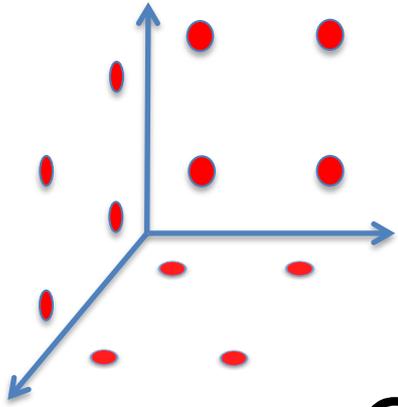
Questions/Comments?
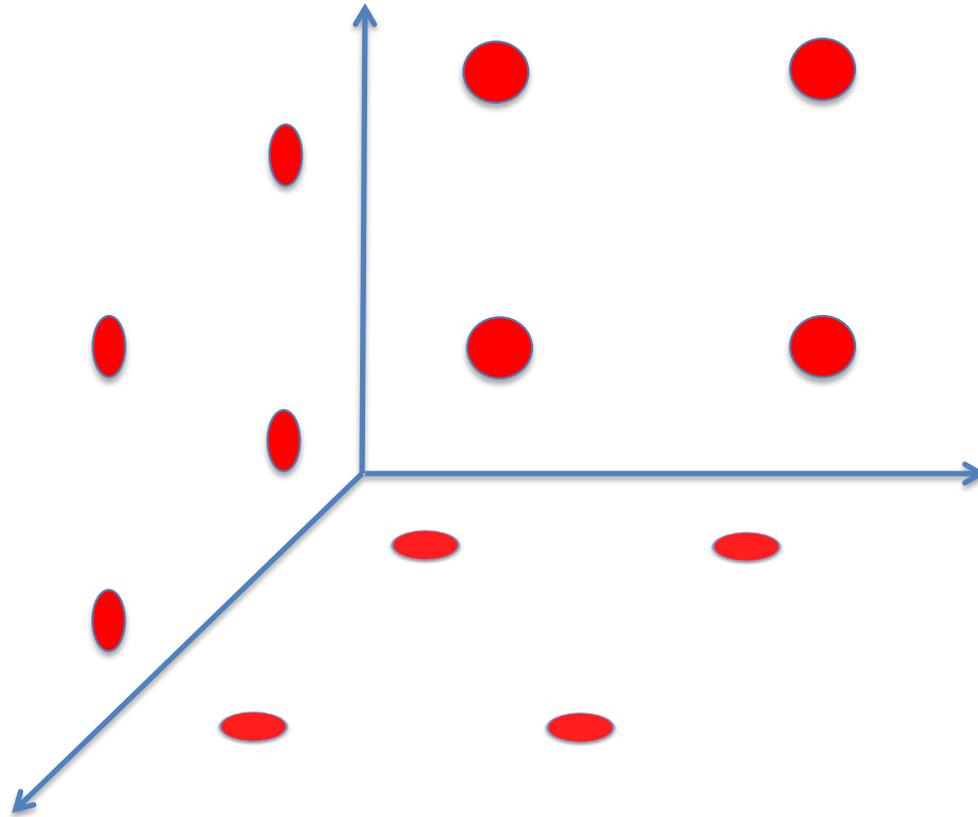
This course: how to solve problems!
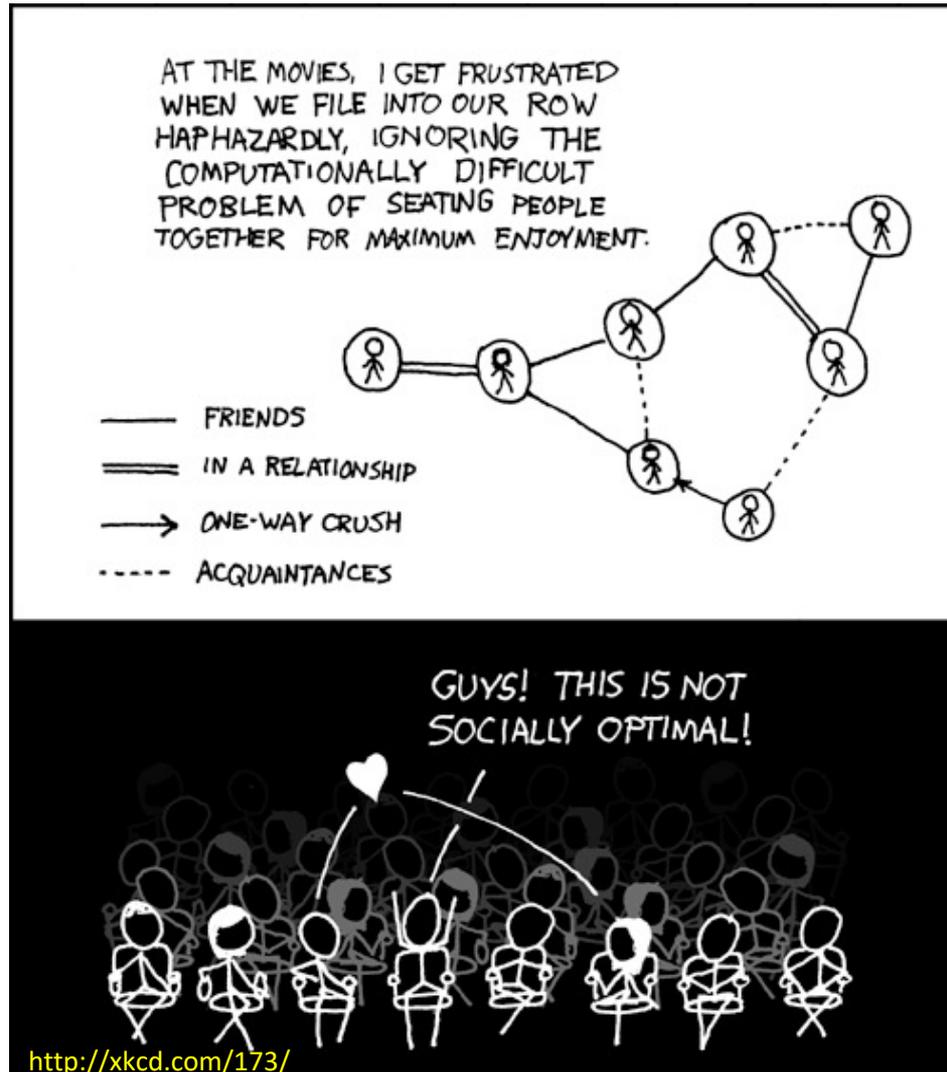
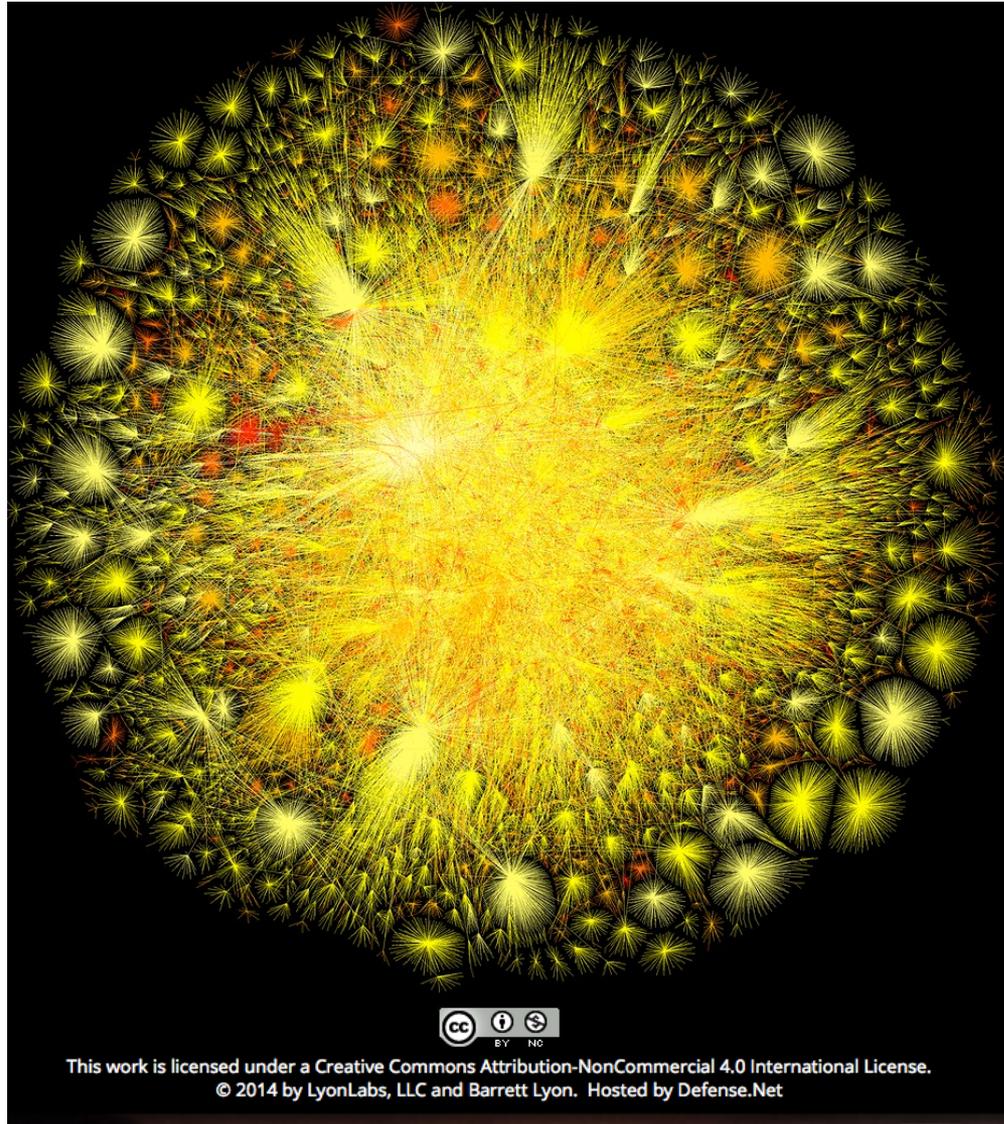# Why should I care ?

Combining Shadows to Understanding the network
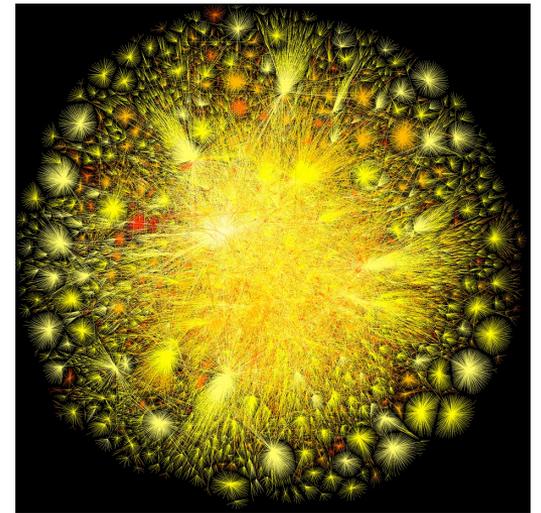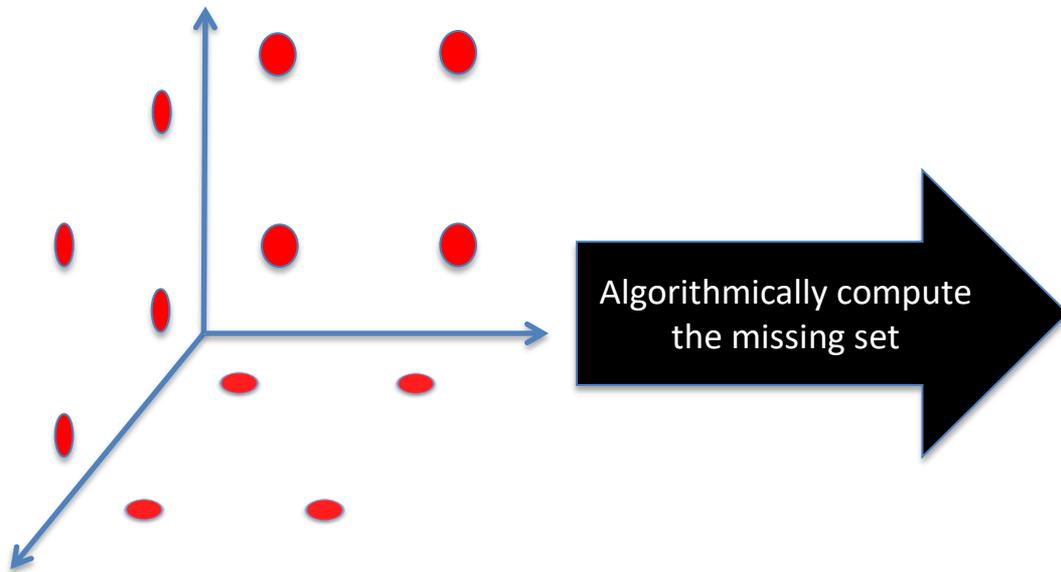
The key technical problem

Given the three projections, what is the largest size of the original set of points?

Detecting Communities

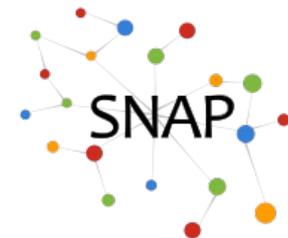# Conquering Shadows to Conquering the Internet

The proof is in the performance

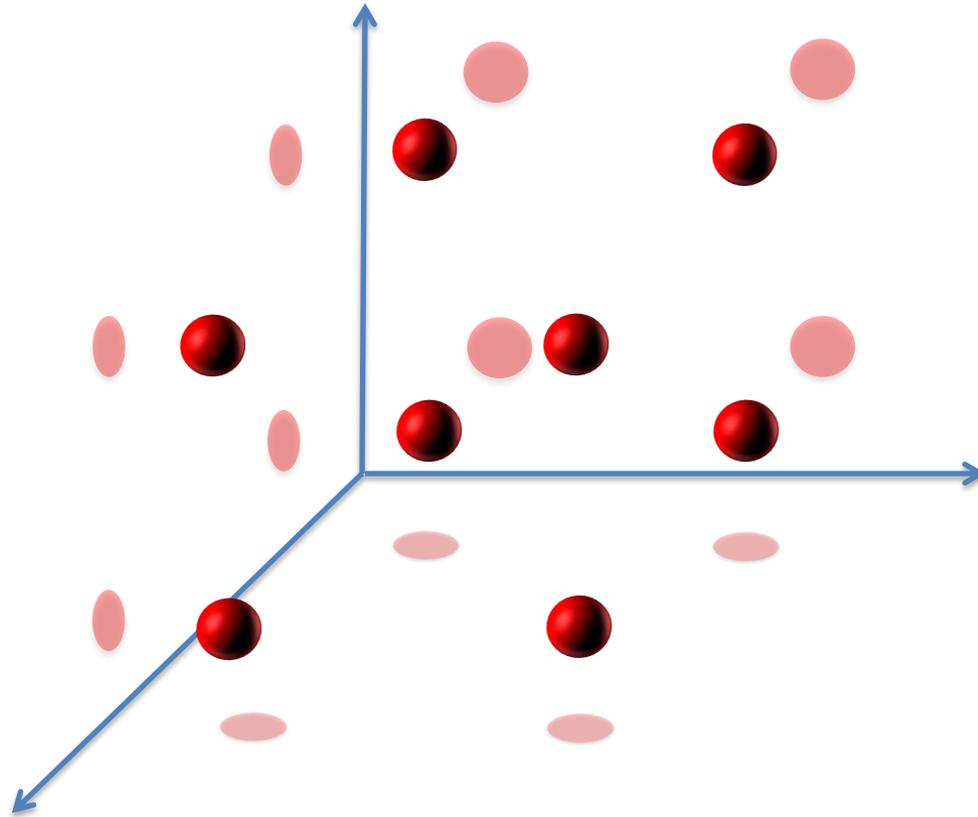**10x faster**

Better algorithm with little hacking will beat a worse algorithm with tons of hacking

The key technical problem

Highly trivial: $4^3 = 64$ Still trivial: $4^2 = 16$ Correct answer: $4^{1.5} = 8$

Questions/Comments?