

A group of approximately 20 diverse students, mostly young adults, are posing for a group photo in a server room. They are standing in front of rows of black server racks. The students are dressed in casual attire, including t-shirts, shorts, and jeans. Some are wearing lanyards with identification badges. The room has a tiled floor and overhead fluorescent lighting. A large, semi-transparent yellow oval is overlaid on the center of the image, containing the text "Welcome to SPIS" in a bold, black, sans-serif font. The background shows the complex infrastructure of a data center, with cables and server units visible.

Welcome to SPIS

Which do you feel is the most influential invention of all time?

- [A] Paper
- [B] Gunpowder
- [C] Electricity
- [D] Compass
- [E] Antibiotics



What is Computer Science?

What word comes to mind when you think of “Computer Science”?

You can answer up to 5 times.

<https://goo.gl/pSkUDD>

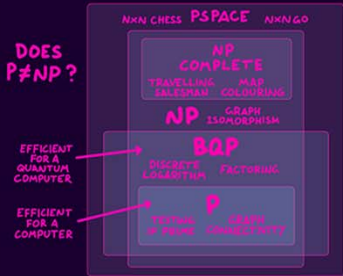
What exactly is Computer Science?



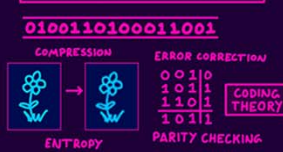
Data * Algorithms * Programming * Binary * Problem Solving
Computational Thinking * Hardware * Creativity * Proofs * Logic * ...

MAP OF COMPUTER SCIENCE

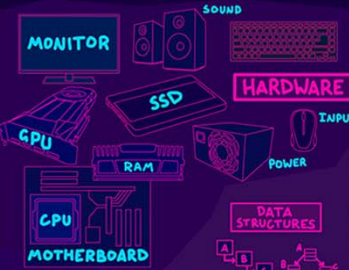
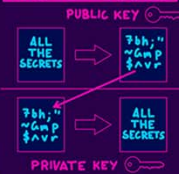
COMPUTATIONAL COMPLEXITY



INFORMATION THEORY



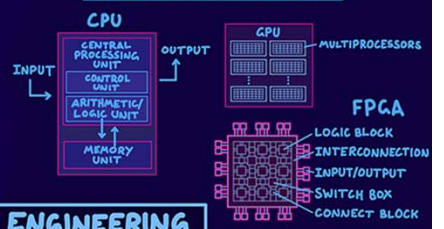
CRYPTOGRAPHY



SCHEDULING



COMPUTER ARCHITECTURE

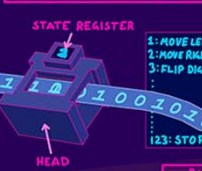


THEORETICAL COMPUTER SCIENCE

COMPUTABILITY THEORY



TURING MACHINE

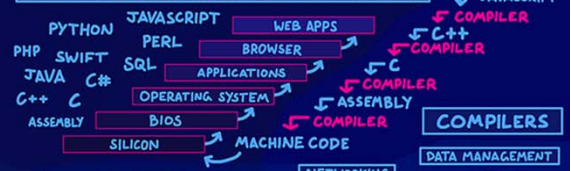


DATA STRUCTURES



COMPUTER ENGINEERING

SOFTWARE AND PROGRAMMING LANGUAGES



OPERATING SYSTEMS



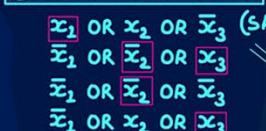
ALGORITHMS



OPTIMISATION



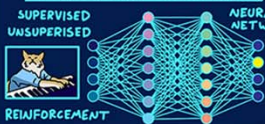
BOOLEAN SATISFIABILITY



SUPER COMPUTING



MACHINE LEARNING



COMPUTER VISION



ARTIFICIAL INTELLIGENCE



ROBOTICS



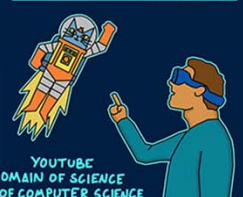
NATURAL LANGUAGE PROCESSING



TELEPRESENCE



AUGMENTED REALITY



HUMAN COMPUTER INTERACTION



SIMULATION



HACKING



BIG DATA



Some History

Counting stones: calculus is Latin for pebble



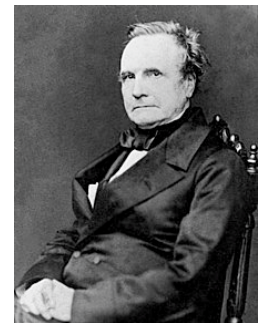
Algebra and Algorithm: Muhammad ibn Musa al-Khwarizmi (850 AD)

<https://youtu.be/wPb3XuST8-Q>



Charles Babbage: “father of the computer” (1850 AD)

Ada Lovelace: “first programmer” (1850 AD)



Alan Turing” “father of computer science” (1945 AD)



CS != programming

programming : CS ::

"not equal to"



CS != programming

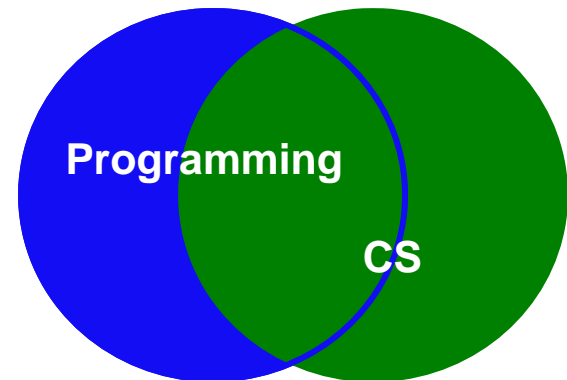
programming : CS ::

surfing : San Diego

machining : engineering

grammar : literature

equations : mathematics



a vehicle, not a destination

CS == *computing* science

Computer Science is...

The science of using and processing
large amounts of information
to automate useful tasks
and learn about the world around us
(using a computer)

"equal to"



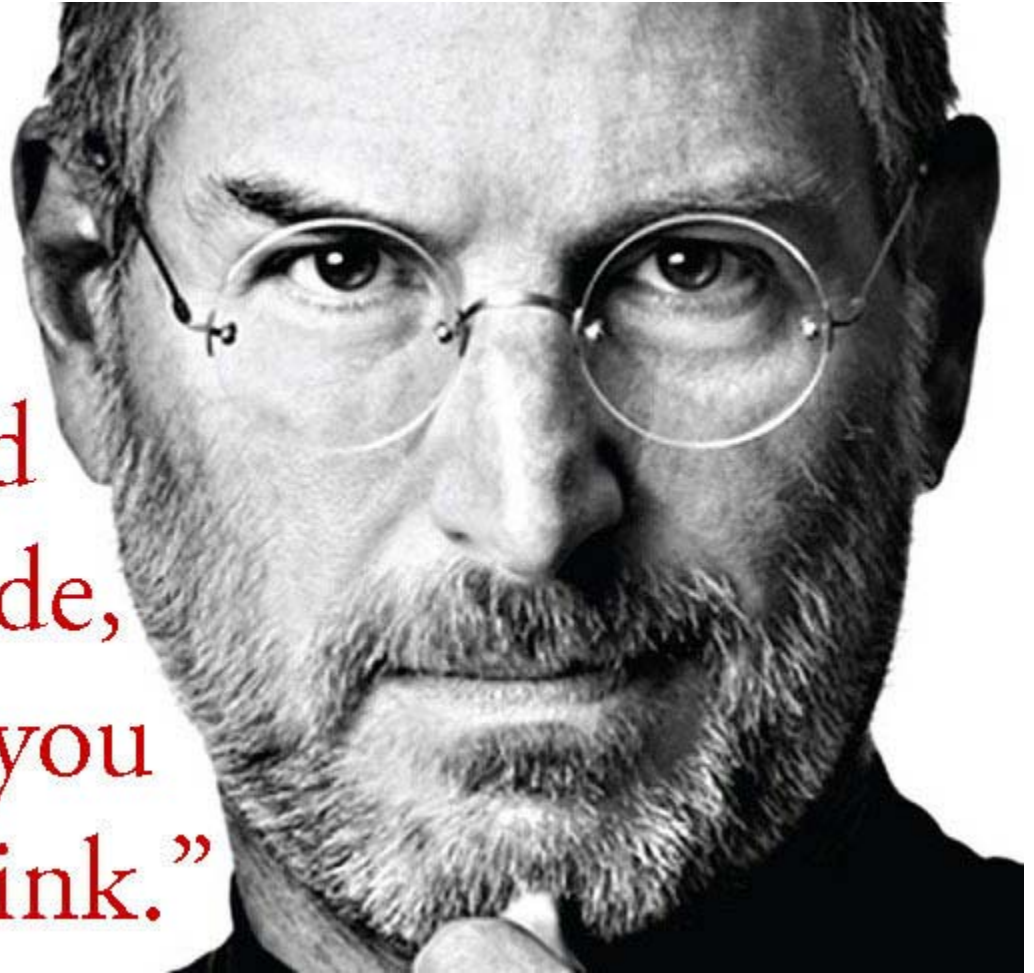
Do you agree with the following statement?

- I believe that there are some people who are “naturally logical thinkers” and some people who are not.
 - A. Yes
 - B. No

Steve Jobs

1955-2011

“Everyone should
learn how to code,
it teaches you
how to think.”



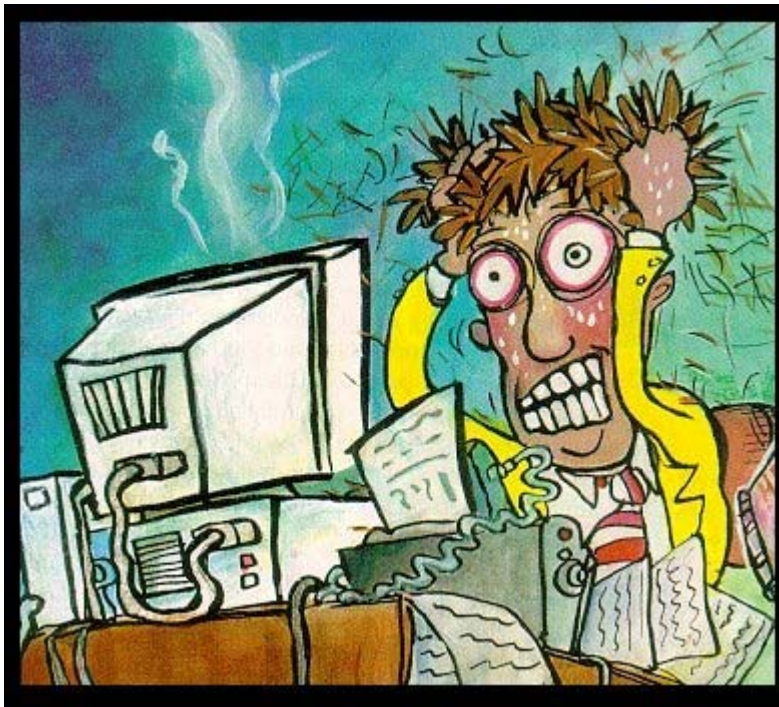
Expect it to be...

Thrilling!
And..



Expect it to be...

Thrilling!
And...



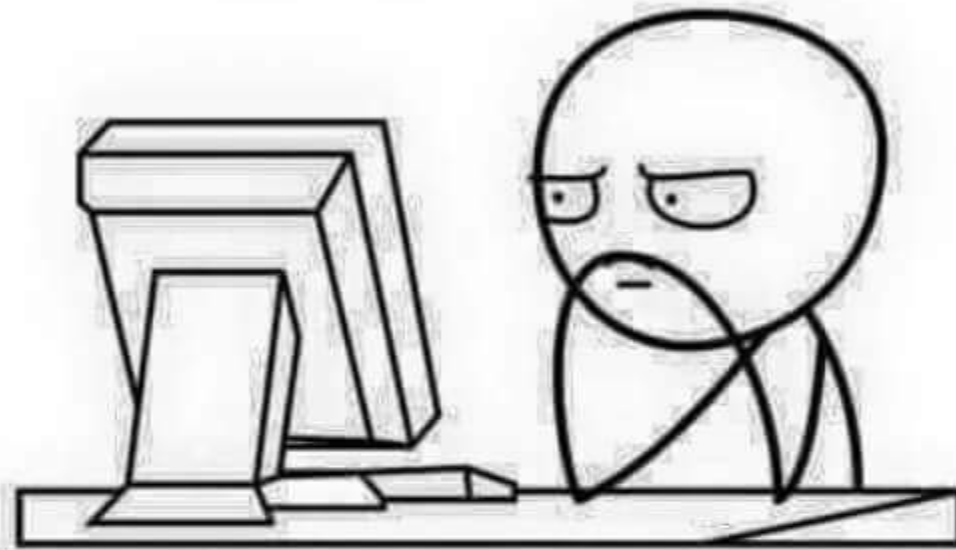
The most frustrating thing
you've ever done!

But, there is no magic



- You can understand everything. Really.
- NEVER guess.

Never let your computer know that you are in a hurry.



Computers can smell fear.
They slow down if they know that
you are running out
of time.

SPIS at a Glance

Mon

Tue

Wed

Thu

Fri

FoCS

Lectures

Labs

1-on-1 meetings

APS

Facets

Social events

Lunch

Fun-time

Closing circle

SPIS at a Glance

FoCS

- Lectures
- Labs
- 1-on-1 meetings

APS

Facets

Social events

- Lunch
- Fun-time
- Closing circle

	Mon	Tue	Wed	Thu	Fri
8:45 - 10	FoCS CSE 2154	APS Lecture CSE 2154	FoCS CSE 2154	APS Discussion CSE 2154	FoCS CSE 2154
10:15 - 11:30	FoCS CSE 2154	FoCS CSE 2154	FoCS CSE 2154	FoCS CSE 2154	Breadth CSE 425
			11:30 - 1 SPIS Lunch Cafe Ventana		Depth CSE 2154
1:15p - 2:45p	Open Lab Hours CSE B230 / CSE B240	Open Lab Hours CSE B230 / CSE B240	Open Lab Hours CSE B230 / CSE B240	Open Lab Hours CSE B230 / CSE B240	One-On Meeting Faculty Offices: Christine
3p - 5p	Open Lab Hours CSE B230 / CSE B240	Facets CSE 1202	Fun Time (Non-academic activity) CSE 1202	Facets CSE 1202	Open Lab Hours CSE B230 /
					3:30p - 5p Closing Circle CSE 1202
		7p - 9p Open Lab Hours CSE B230 / CSE B240		7p - 9p Open Lab Hours CSE B230 / CSE B240	

SPIS Academics Site

<https://ucsd-cse-spis-2018.github.io/>

- Agenda
- Calendar
- Lecture notes
- Homework assignments: APS and enrichment videos
- Lab assignments
- Extra information

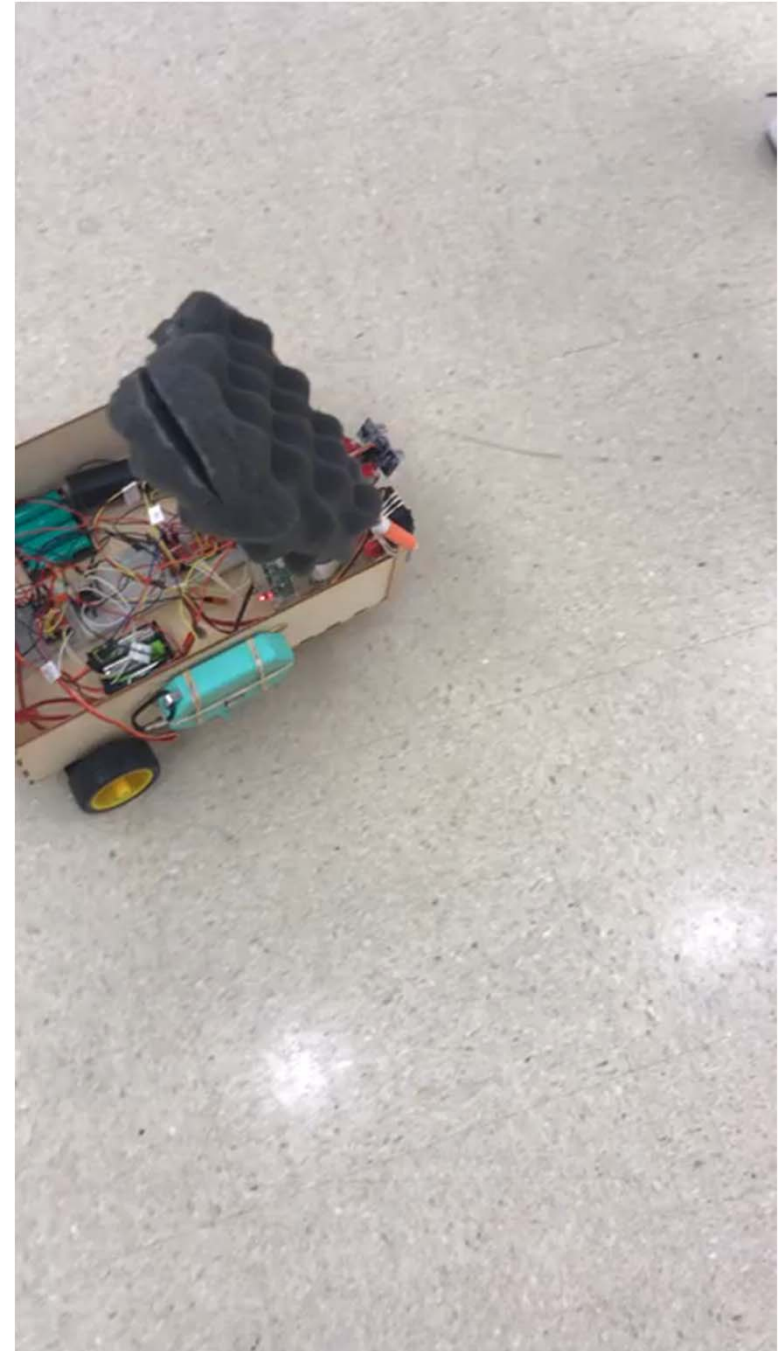
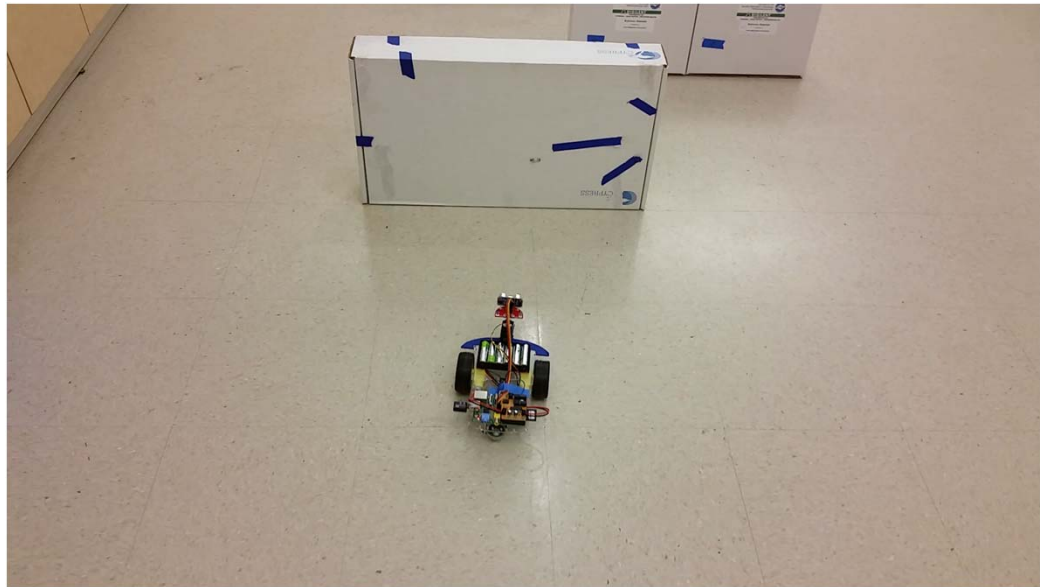
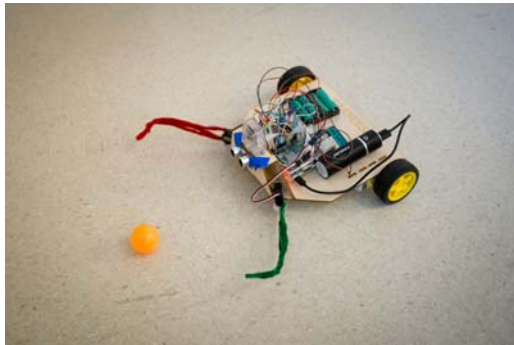
- Online textbook: “CS for All”
<https://www.cs.hmc.edu/csforall/>
- Feedback repos

Schedule

- First four weeks
 - FoCS and APS
- Last week: projects
 - Webapps
 - Robotics
 - Data science/machine learning



Robotics



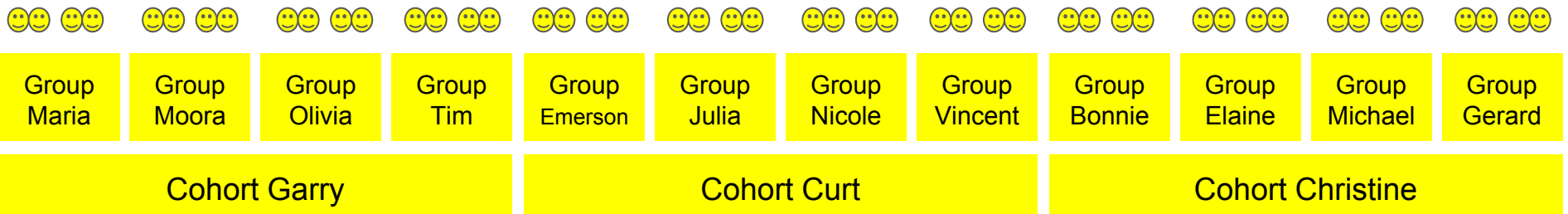
Structure

- Pair partner
- Groups of 4 with a mentor
- Cohort of 16 with an instructor

FoCS labs

mentor lunch on Wed

1-on-1 meetings on Fri



Pair Programming

- Driver – navigator
- Switch roles
- Come prepared



Daniel Stori {turnoff.us}

Expectations

- Attendance is expected: FoCS and APS lectures/discussion, facets, closing circle, 1-on-1 meetings, mentor lunch, most lab hours
- Have contact info of your mentors and give them your contact info.
Let them know if
 - You're going off campus
 - You are missing SPIS components where attendance is expected
 - Anything out of the ordinary is happening
- Wear your lanyards
- Be engaged
- Have fun