

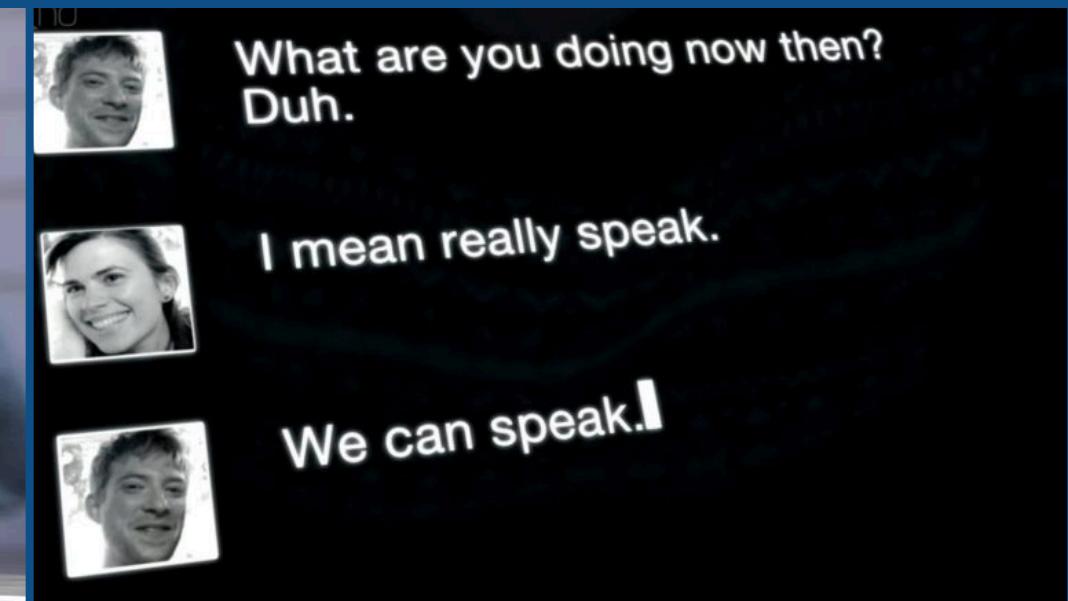
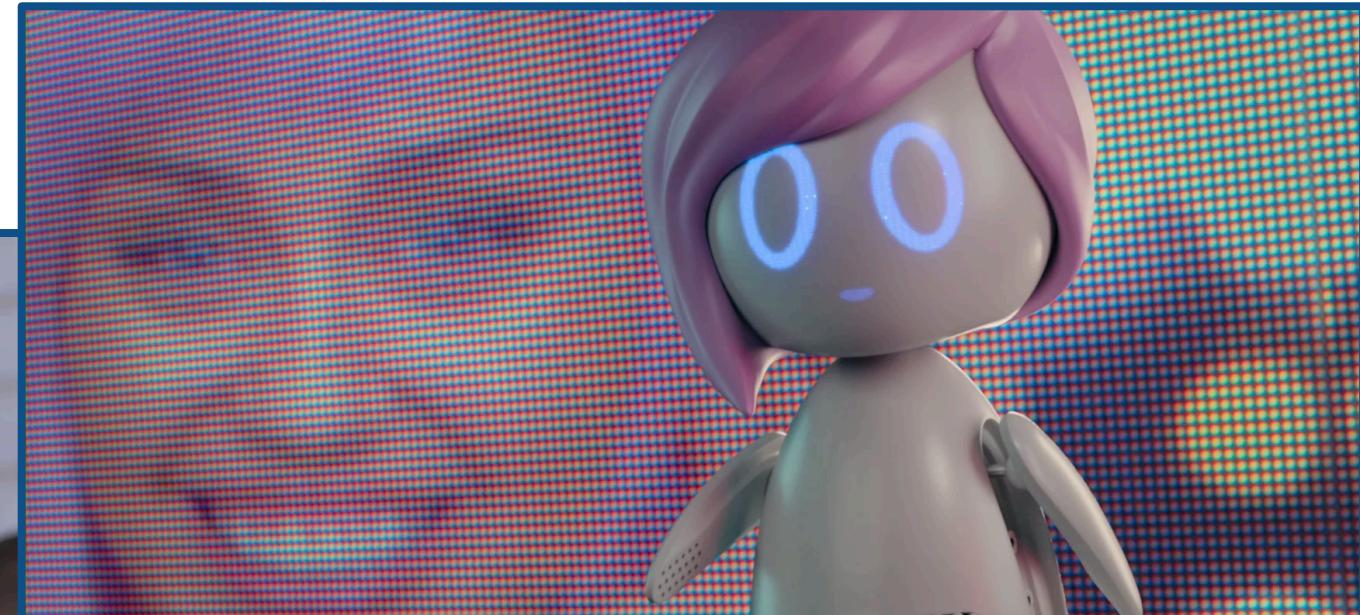
CS 193.1

# Introduction to Social Computing



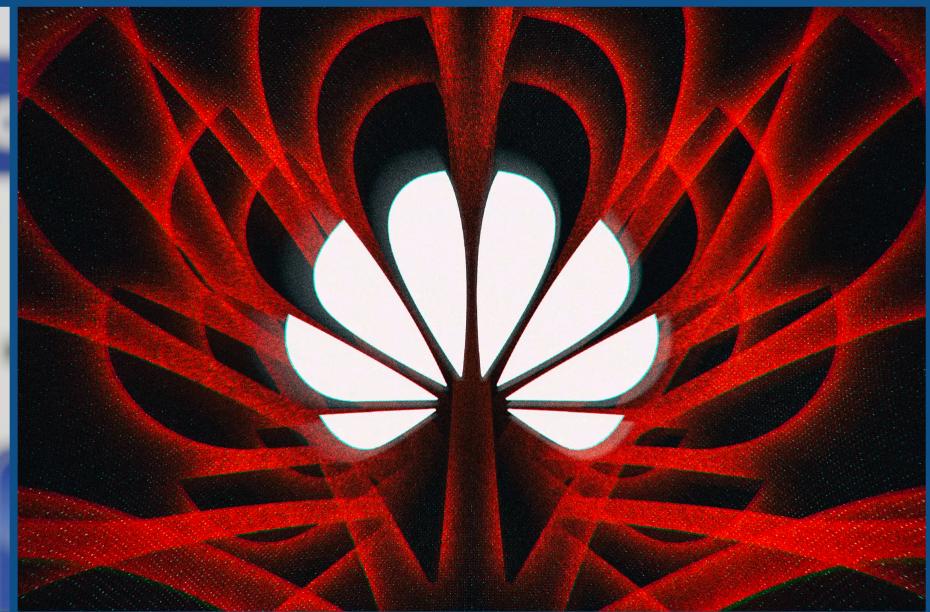
# Think the future is scary?

Photos courtesy of Netflix.



It *already* is.

Photos courtesy of *The Verge*.





# We have **social selves**.

Different situations require different actions, behaviors, and characters.



# We are **data subjects**.

We generate data on a daily basis.



That data has a lot of **value**.

Attention becomes clicks that become money.



**Yet this value is **not ours**.**

Our online personas are commodified, our behaviors predicted,  
and our actions exploited.

# Welcome to CS 193.1!

**Introduction to  
Social Computing**  
*with Mr. Railey Montalan*  
CTC 215, 11–12:30

# Course Description

This course provides a background on:



Social psychology  
and language



Social networks analysis  
and social mining



Key developments in  
big data analytics



Contemporary issues  
in the internet society

# Learning Outcomes

*For theory and concepts:*

- Explain and discuss basic concepts in **social computing**, including elements, types, and related systems relationship between social psychology and social computing.
- Explain concepts and theories in **social psychology** and its relation to online environments.
- Assess and apply appropriate social psychological theories in social computing research.

# Learning Outcomes

*For technology:*

- Use open source tools for **quantitative and qualitative analysis** in understanding social behavior in online communities.
- Understand, deploy, run and manage big data applications in the **cloud environment**.

# Learning Outcomes

*For application:*

- Analyze **small and big data in structured and unstructured format** using appropriate technologies.
- Conduct a simple **social computing experiment** and present analysis.
- Identify and propose a **solution to a social problem**.

# Course Outline

Week 1: Overview of Social Computing	<ul style="list-style-type: none"><li>- Understand course syllabus and requirements</li><li>- Introduce code of academic integrity and laboratory policies</li><li>- Discuss social computing and sociotechnical systems</li><li>- Install tools and packages and setup accounts</li></ul>	Administrivia, lecture, reading, homework	<ul style="list-style-type: none"><li>- Homework 1: Reflection on a social computing paper</li></ul>
Week 2-3: Text mining and Natural Language Processing	<ul style="list-style-type: none"><li>- Perform data gathering, manipulation, exploratory analysis, visualization</li><li>- Perform text mining, dimensionality reduction, classification, topic modeling, sentiment analysis</li><li>- Perform natural language processing (NLP)</li><li>- Deploy AWS text mining and NLP applications</li><li>- Assess computing skills</li></ul>	Lecture, text mining and NLP on Python (Scikit-learn, Gensim, SpaCy, Keras) and AWS, hands-on exam	<ul style="list-style-type: none"><li>- Major Requirement: Proposal</li><li>- Exercise 1: Text mining and NLP in Python</li><li>- Exercise 2: Deploying text mining and NLP applications on AWS</li><li>- Hands-on Exam</li></ul>

# Course Outline

Week 4: Social Psychology and the Wisdom of Crowds	<ul style="list-style-type: none"><li>- Understand the social psychology of language, social relationships, social processes, social influences</li><li>- Discuss crowdsourcing definitions and algorithms</li><li>- Conduct group social psychology experiment</li></ul>	Lecture, reading, quiz, homework, social psychology experiment	<ul style="list-style-type: none"><li>- Major Requirement: Progress update</li><li>- Quiz 1: Concepts in Social Psychology</li><li>- Homework 2: Reflection on social psychology experiment</li></ul>
Week 5: Social Networks and Social Computing Platforms	<ul style="list-style-type: none"><li>- Understand concepts in social networks, social systems, collective intelligence</li><li>- Perform social network analysis (SNA)</li><li>- Understand elements of social computing platforms</li></ul>	Lecture, reading, quiz, SNA on Python (NetworkX)	<ul style="list-style-type: none"><li>- Quiz 2: Concepts in Collective Intelligence</li><li>- Exercise 3: Social network analysis in Python</li></ul>

# Course Outline

Week 6: Ethics in Social Computing	<ul style="list-style-type: none"><li>- Discuss ethical practices in implementing social networking applications and platforms</li><li>- Prepare for Major Requirement</li></ul>	Lecture, reading homework	<ul style="list-style-type: none"><li>- Major Requirement: Final draft</li><li>- Homework 3: Reflection on surveillance capitalism and ethical social computing</li></ul>
Week 7: Final Requirements	<ul style="list-style-type: none"><li>- Present Research Paper or Design Project</li><li>- Take Big Data Challenge</li></ul>	Major presentation, Big Data Challenge	<ul style="list-style-type: none"><li>- Major Requirement: Presentation</li><li>- Big Data Challenge</li></ul>

# Course Requirements and Grading

Homework †	15%
Tool Exercises †	15%
Quizzes ‡	10%
Hands-on Exam ‡	25%
Major Requirement (choose 1)	35 %
Research Paper †	
Design Project †	
Big Data Challenge ‡	

† *Output-based requirements*

‡ *Knowledge-based requirements*

93–100	A	Excellent
87–92	B+	Very Good
81–86	B	Good
75–80	C+	Satisfactory
69–74	C	Sufficient
60–68	D	Passing
< 60	F	Failure

# Readings

- Required readings will be found on Moodle.
- Suggested readings include:
  - J. Surowiecki. ***The Wisdom of Crowds***. Anchor Books, New York, 2005.
  - B. Whitworth, and A. Ahmad. ***The social design of technical systems: Building technologies for communities***. Interaction Design Foundation, 2013.
  - S. Zuboff. ***The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power***. PublicAffairs Books, New York, 2018.

# Classroom Policies

1. Attendance will be checked by the class beadle every meeting. Exceeding the number of allowable cuts, which is three (3) for the intersession semester, will result in a final grade of W.
2. In case you cut, it will be your responsibility to know the material covered for the day.
3. The instructor reserves the right to give unannounced quizzes or graded activities at any time.
4. All work shall be submitted through the LS Moodle online system unless otherwise stated.
5. All output-based requirements may be submitted late but not later 72 hours (3 days) beyond the specified deadline. One letter grade deduction will be applied per 24 hours late.
6. Make-up work for missed knowledge-based requirements are given only for excusable circumstances accompanied with proof, such as representation to official academic functions, grave medical incidents, and other valid reasons. Make-up work for output-based requirements will not be given.
7. Final grades are rounded off to the nearest two decimal places.

# Classroom Policies

8. Students may use computing devices during class hours if they are used in connection with the current lecture or activity. Playing games, using social media (Facebook, Twitter, Instagram, etc.), instant messaging, and other disruptive activities are strictly prohibited.
9. Cheating will not be tolerated. Cheating in any requirement will result in a minimum penalty of having a grade of 0 for that requirement and will be reported to authorities for appropriate sanctions, as provided for by the Student Handbook. Duplicate work will merit penalties for both the student who copied and the student from whom the work was copied.
10. Students are expected to comply with the DISCS Academic Integrity Policy. Students must clearly acknowledge and specify any help from outside sources such as other classmates, books, existing research, and other resources that they received while doing their requirements. Failure to acknowledge such may be interpreted as intellectual dishonesty. Any form of academic dishonesty will be reported to appropriate authorities as indicated in the Student Handbook.

# Consultations

- You may consult me for any clarifications with the lessons, requirements, grading, and other relevant matters.
  - TTH 9:00–11:00 @ CTC 313
  - Set an appointment first via [jmontalan@ateneo.edu](mailto:jmontalan@ateneo.edu)
- Midterm and pre-final grades may be provided upon request via email.

# We need a **beadle.**

For announcements, attendance checking, and small menial tasks.

# **What is social computing?**

Or rather, what is its goal?

Less like



More like



Google Ads

*Photos courtesy of Valve and Google.*

We want to understand  
**sociocultural and behavioral processes**



Group interaction  
and collaboration



Group formation  
and evolution



Group  
representation  
and profiling



Influence process  
and recognition

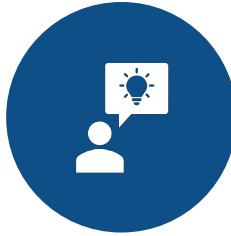


Public opinion  
representation



Cultural patterns  
& representation

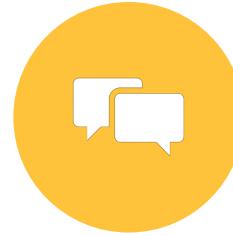
We want to  
**model**  
interactions



Reasoning and  
decision making



Model validation  
and comparison



Sociocultural  
interaction



Human  
movement



Performance and  
skill assessment



Performance  
optimization

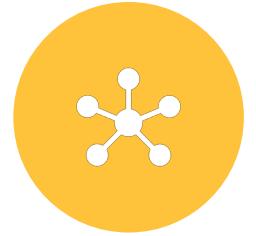
We want to  
**create smarter  
systems**



Social media  
data mining



Community  
detection



Diffusion over  
networks



Political influence



Sales and  
advertising



Health behavior

# What are its challenges?

Being theory-based

Difficulty in data gathering

Biases in  
timeframe,  
sources, topics

Developing new  
methods and  
solutions

# **Why is it social?**

What perspective does social psychology bring?

# Social Psychological Perspectives

- There are social processes in play.
  - **Individual:** self and identity, actions, behaviors, characters
  - **Interpersonal:** personas, relationships, altruism, aggression
  - **Intragroup:** social performance, social influence
  - **Intergroup and Societal:** social identity, stereotyping



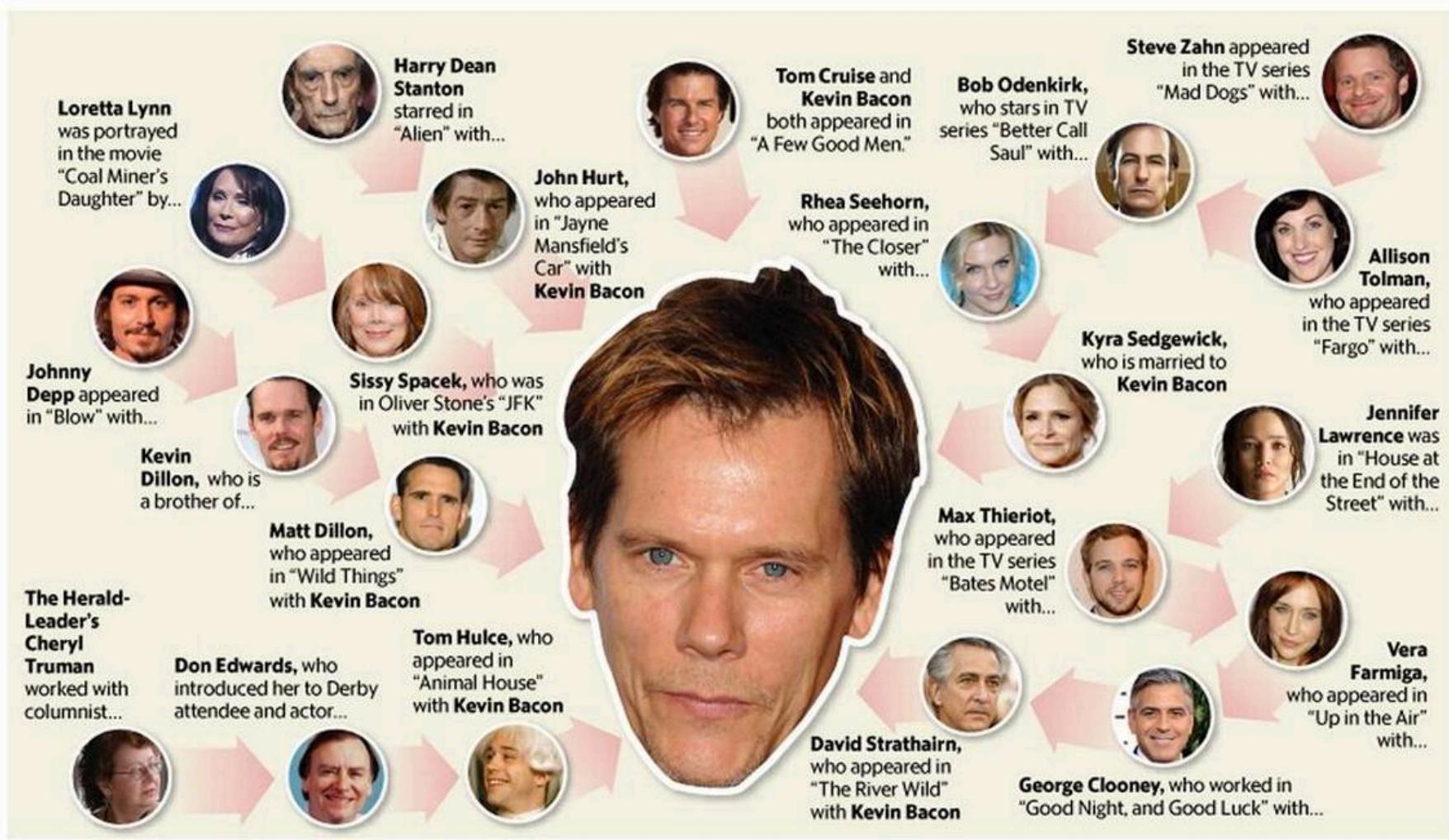
@noobmaster69



*Photos courtesy of Fandom.*

# Social Systems

- Several social structures and phenomena arise.
  - Economic vs. Cooperative Man
  - Tragedy of the Commons
  - Prisoners' Dilemma
  - Synergy
  - Defection
  - Social order
  - Social hijack
  - Social capital



Photos courtesy of Lexington Herald Leader.

## Activity 1: Connections

- On a piece of paper, write about yourself:
  - Order in the family (oldest, middle, youngest, etc.)
  - Favorite color
  - Favorite Filipino food
  - Shirt color today
  - Last video game you played
  - Last song you heard
  - Gender of your best friend

# **Why is it computational?**

What perspective does computing bring?

# Evolution of computing

- 1960s: Mechanical hardware
- 1970s: Mainframes
- 1980s: Personal computers, OS
- 1990s: Internet, software
- 2000s: Social networking, collaboration

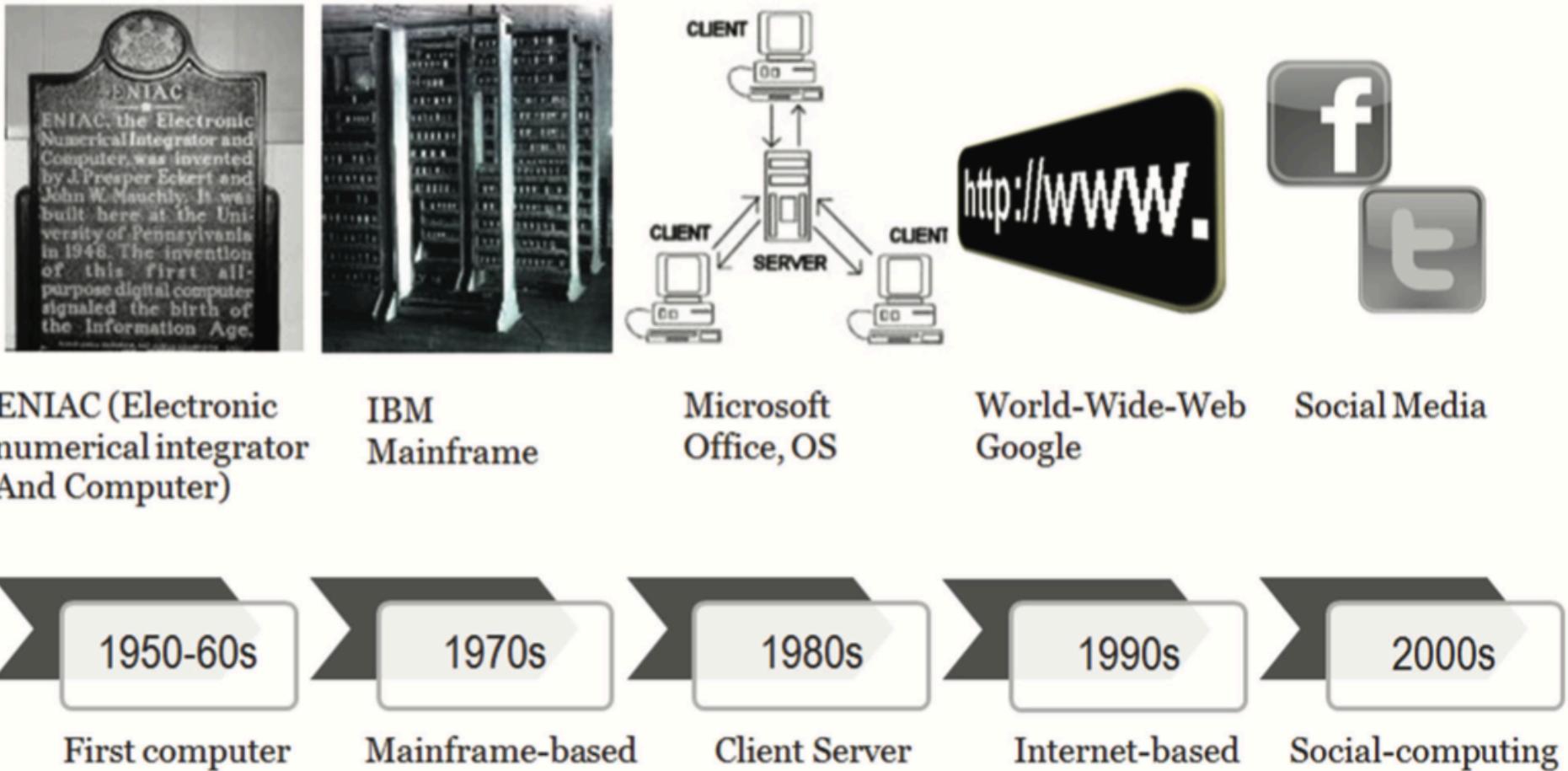


Figure 1.2: The computing evolution

Courtesy of Brian Whitworth with Adnan Ahmad. Copyright: CC-Att-SA-3.

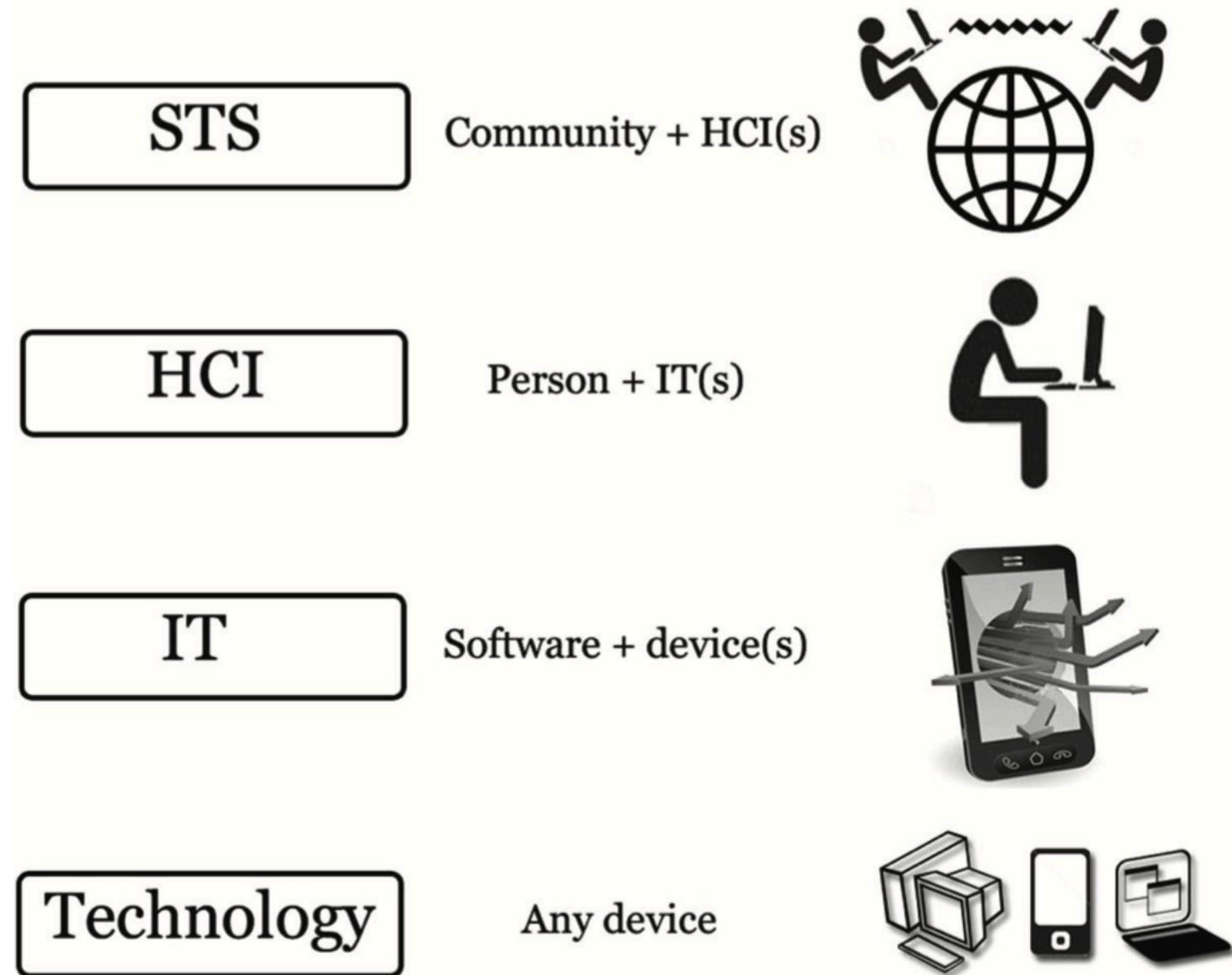


Figure 1.3: Computer system levels

Courtesy of Brian Whitworth with Adnan Ahmad. Copyright: CC-Att-SA-3.

<b>Level</b>	<b>Exchange</b>	<b>Examples</b>	<b>Design</b>
<i>Community</i> (sociology)	Memes	Norms, culture, laws, zeitgeist, sanctions, roles	STS
<i>Personal</i> (psychology)	Meaning	Semantics, attitudes, beliefs, feelings, ideas	HCI
<i>Information</i> (computer science)	Information	Programs, data, bandwidth, memory	IT
<i>Mechanical</i> (engineering)	Energy	Hardware, motherboard, telephone, FAX	Technology

Table 1.1: The levels of computing.

*Photo courtesy of Brian Whitworth.*

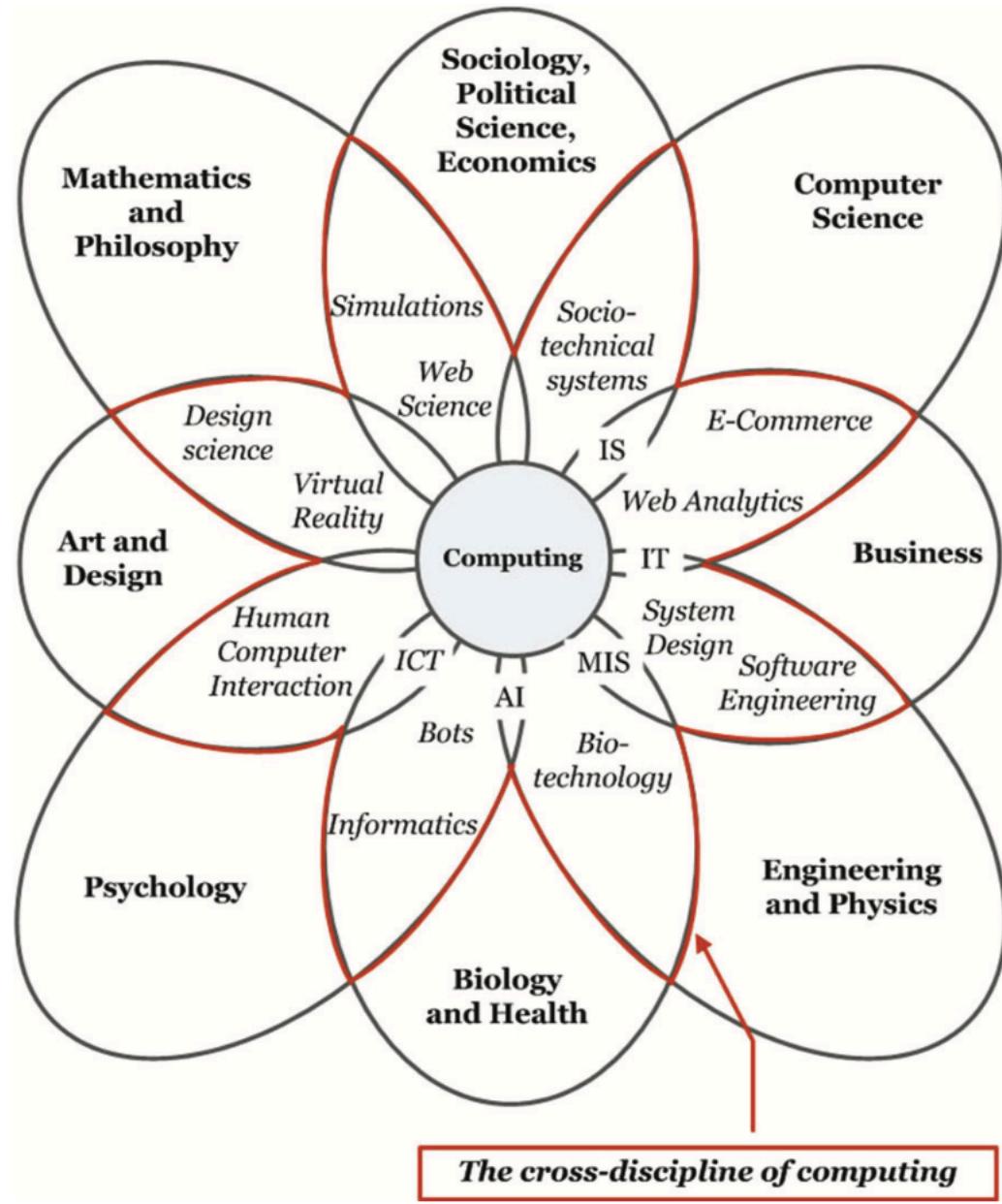


Figure 1.11: The flower of computing

Courtesy of Brian Whitworth with Adnan Ahmad. Copyright: CC-Att-SA-3.

## **Activity 2: Reverse Engineering**

- Name a social media platform and figure out what social problem it is trying to solve.
- Name the kinds of data you can extract from this social media platform.

# **Why is social computing (SC) important?**

What value does it bring to our lives?



# We make sense of society.

- Social computing allows us to:
  - Create an environment for community-driven solutions
  - Simulate complex problems
  - Understand social behavior of individuals
- With sociotechnical systems:
  - Social data is recorded and modeled
  - Opportunities for social change can arise



# However, we need to be wary.

- Methods for have been exploited for nefarious computer-mediated transactions:
  - Willful disclosure of social personas
  - Deliberate and covert extraction of data for analysis
  - New “contractual forms” through better monitoring
  - Personalization and customization of social hooks
  - Continuous experiments with societal conscience



## SC is still pretty amazing.

- In many contexts, crowdsourced knowledge is better than domain “expertise”
- A sort of collective intelligence is present: the wisdom of the crowd



**Next time...**

:

Introduction to Social Psychology

Analyzing a work of social computing

Installing tools and setting up accounts