COGS 1: Spring 2019

Section I, Week 10

Professor Boyle	*mboyle@ucsd.edu*	Friday, 2-4 pm	CSB 130
Lauren	*lcurley@ucsd.edu*	Tuesday, 10-11 am	CSB 225
Lexi D.	*adalenco@ucsd.edu*	Tuesday, 12:30-1:45 pm	The Loft
Elena	*edreisba@ucsd.edu*	Thursday, 1-2 pm	CSB 114
Adrian	*ajm033@ucsd.edu*	Wednesday, 5-6 pm	CSB 114
Audrey	*aberardi@ucsd.edu*	Tuesday, 4-5 pm	CSB 114
Devansh	*d4agarwa@ucsd.edu*	Monday, 4-5 pm	CSB 114
Lori	*rol044@ucsd.edu*	Monday, 10-11 am	CSB 114
Lexi F.	*adfrankl@ucsd.edu*	Thursday, 4-5 pm	CSB 114

Important Information

- **Midterm 3 (NO FINAL during Finals Week!)**
  - On **Thursday, June 6** (during normal lecture time)
  - Covers all material from **Weeks 7 – 10**
  - Scantron will be provided
  - Bring a pencil/pen and student ID

- **EC Reading Quiz**
  - Based on reading for Dr. Klemmer's lecture: *"Gut Instinct: Creating Scientific Theories with Online Learners".*
  - Available on TritonEd from **Monday, June 3 @ 4 pm – Tuesday, June 4 @ 10:00 am**

COGS 1	A01	Boyle, Mary E. T.	55	34	61.82%
COGS 1	A02	Boyle, Mary E. T.	60	31	51.67%
COGS 1	A03	Boyle, Mary E. T.	56	22	39.29%
COGS 1	A04	Boyle, Mary E. T.	55	17	30.91%
COGS 1	A05	Boyle, Mary E. T.	61	20	32.79%
COGS 1	A06	Boyle, Mary E. T.	58	25	43.10%
COGS 1	A07	Boyle, Mary E. T.	56	30	53.57%
COGS 1	A08	Boyle, Mary E. T.	55	23	41.82%

☑ What could you do with a $100 Triton Cash card?

🖨 ⎘

UCSD Online Evaluations <evals@ucsd.edu>
to me ▾

7:48 AM (8 hours ago) ☆ ↩ ⋮

Elena Dreisbach:

Five $100 Triton Cash cards are up for grabs this quarter. Evaluate your Instructional Assistant (IA) to be automatically entered into the drawing! Follow the link below for details.

You still have pending IA evaluations for the following Spring 2019 courses:
COGS 101B - Learning, Memory and Attention
USP 147 - Case Studies/Hlth Care/Poor

Spring 2019 evaluations are due by Monday, June 10 at 11:59 PM. Please submit your evaluations here:
https://academicaffairs.ucsd.edu/Modules/Evals?e4880603

Last Week's Topics

- **Lecture 15 | Dr. Dow: Advancing Collective Innovation**

- **Lecture 16 | Dr. Hollan: A Glimpse of Human Computer Interaction (HCI)**

Lecture 15 | Review Questions (1 of 5)

1. How can we harness collective intelligence energy and creativity?
2. What is the myth of the "lone genius"?
3. What is so special about collaboration?
4. What are the factors associated with teams that make them successful?
5. How do we collectively innovate?
6. Discuss the conference scheduling tool.

Lecture 15 | Review Questions (2 of 5)

7. What is "Brainstorming with Crowds"?
8. Discuss the elements associated with CrowdCrit.
   a. What made it successful? What were the results?
   b. What role do rubrics play in evaluation and critiques? How did novices compare with experts?
9. What is CommunityCrit?
   a. What sorts of tasks do people participate in?
   b. Give examples of projects where CommunityCrit was utilized.
10. What is PeerPresents? What features of PeerPresents are important for crowdsourcing and data mining?

Lecture 16 | Review Questions (3 of 5)

11. [What is the advice given by Dr. Hollan?](#)

12. [What does DSGN 1 focus on? Understand with examples.](#)

13. [How can algorithms influence the political environment? Which algorithm was mentioned in lecture?](#)

14. [How does "thinking with computers" force us to re-conceptualize what "thinking" means?](#)

Lecture 16 | Review Questions (4 of 5)

15. In what ways are computers a special kind of tool? What did Abe Davis' research show, and how could you imagine it changing our lives? How else have recent advances in computers changed our lives?

16. How does technology change the boundaries between the physical (biological) and digital world? What were the lessons of the development of ObjectTop?

17. What is "Spore"? How was it used?

19. [What are the characteristics associated with "smart" teams?](#)

20. [How does "Theory of Mind" and emotion-reading facilitate group work?](#)

21. [What are ChronoViz and Activity Trails?](#)

22. [What is ubiquitous capture? What is "lifelogging" and how it is associated with our lives?](#)

1. How can we harness collective intelligence energy and creativity?

Bringing People Together

- <u>Internet</u> ⇒ unite people with *common interests* ⇒ harness collective energy & creativity
  - E.g. Wikipedia, GalaxyZoo.org, Foldit, etc.
- Strategically structure interactions to coordinate **innovating and problem-solving w/in a problem space**
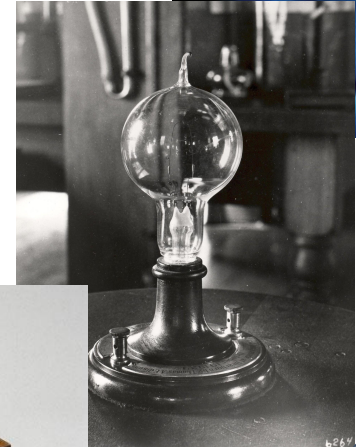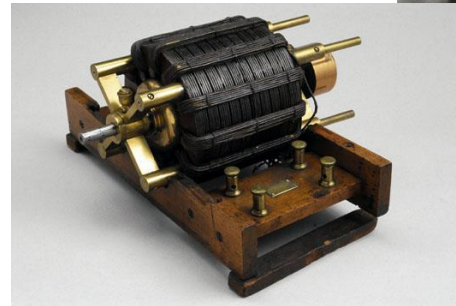

foldit
Solve Puzzles for Science
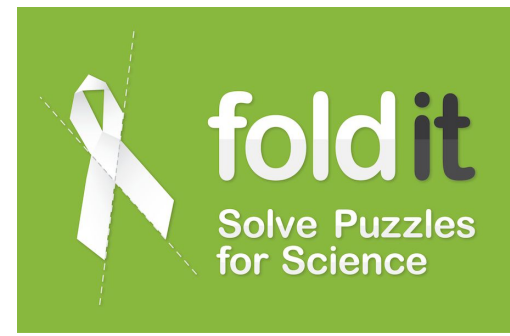
WIKIPEDIA
The Free Encyclopedia

All Ques.
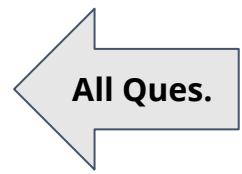
2. What is the myth of the "lone genius"?

No Innovation Without Collaboration

- Accomplishments / innovations / inventions ⇒ individual vs. team (i.e. many individuals)
  - Light bulb (Thomas Edison)
  - AC motor (Nikola Tesla)
  - "Mega movies" e.g. Avatar (James Cameron)

It's a **team effort**!
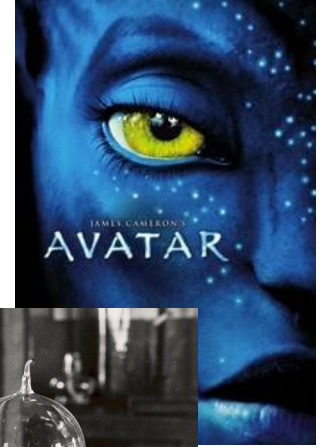
3. What is so special about collaboration?

The Magic of Team Effort

Collaborate to solve "**Wicked Problems**"

What's a **Wicked Problem**?

A problem that is *difficult or impossible to solve* because of incomplete, contradictory, and changing requirements.

All Ques. These types of "**Wicked Problems**" necessitate collaboration and multiple viewpoints to tackle the constraints of the "**Problem Space**"

4. What are the factors associated with teams that make them successful?

Finding Solutions Amidst Constraints

Real-time facilitation
- More ideas generated
- Greater max creativity
- Greater depth of search

more ideas — greater max creativity

$F(1,83) = 6.4, p = .01$ $F(1,83) = 4.8, p = .03$
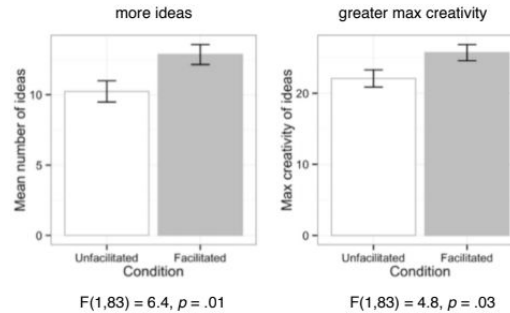
Coordinate parallel efforts when navigating "Problem Space"
- Independent teams ⇒ only gain insight on a portion of the "**Problem Space**"
- Multiple teams can discover constraints at scale

Credit: Olimpia Zagnoli

5. How do we collectively innovate?

Power of Multiple Teams

- **OpenIdeo** platform ⇒ harvest design inspiration from examples on the Web
- Isolated teams ⇒ not sufficient
  - Need **collaboration** / **parallel coordination** of *many* teams

Musts:
- Obtain **diverse feedback**
- Explore many solutions / paths in parallel
- Adapt & refine ideas generated during brainstorming stages

All Ques.

6. Discuss the conference scheduling tool.

Conference Scheduling Platform

COBI ⇒ Community Sourcing Large-Scale Conference Scheduling

Ultimate goal: Create conference schedule that takes into account preferences / constraints of organizers, authors & attendees (**committee-sourcing** and **author-sourcing**)
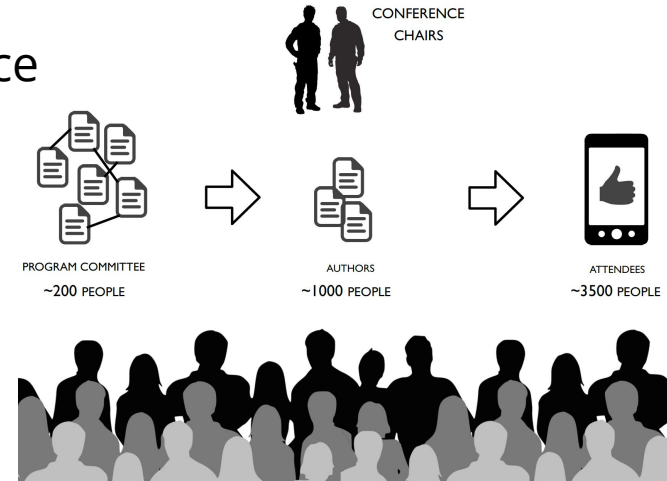
- **Paper Recommendation Tool** ⇒ which talks to attend? Related papers?
- Application not only to academic conferences, but also similarly collaborative settings

CONFERENCE CHAIRS

PROGRAM COMMITTEE
~200 PEOPLE

AUTHORS
~1000 PEOPLE

ATTENDEES
~3500 PEOPLE

Your Paper: **iPhone In Vivo: Video Analysis of Mobile Device Use**

1. Tell us your name: (as it appears in the paper)

2. We've identified 10 papers that may be similar to yours. Tell us how they would fit in a session with your paper:

Delivering Patients to Sacre Coeur: Collective Intelligence in Digital Volunteer
○ Great in same session
○ Okay in same session
○ Not sure if it should be in same session
○ Should not be in same session

7. What is "Brainstorming with Crowds"?

Collective Brainstorming

- Build **affinity model of concepts**
  - Algorithm devised to leverage / *explore* the **design space** ⇒ take advantage of spatial organization of ideas - *like this*⟶
- <u>Goal:</u> Find **semantic relationships** among ideas ⇒ "facilitated" crowd brainstorming
  - Show **auto-selected diverse examples** (vs. non-diverse ex's or no ex's at all) ⇒ lead people to generate more diverse ideas

All Ques.
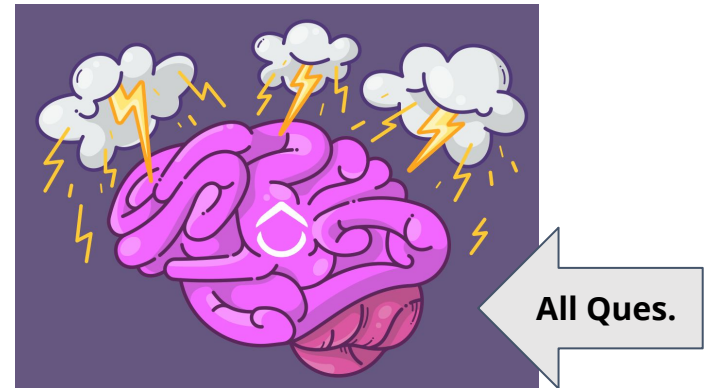
8a. Discuss the elements associated with CrowdCrit. What made it successful? What were the results?

Scaffolding Feedback Exchange

- Structuring, aggregating, and evaluating crowdsourced design critique
- Associated elements:
  - Principled Rubrics
  - Annotations
  - Visual overview
  - Detailed feedback
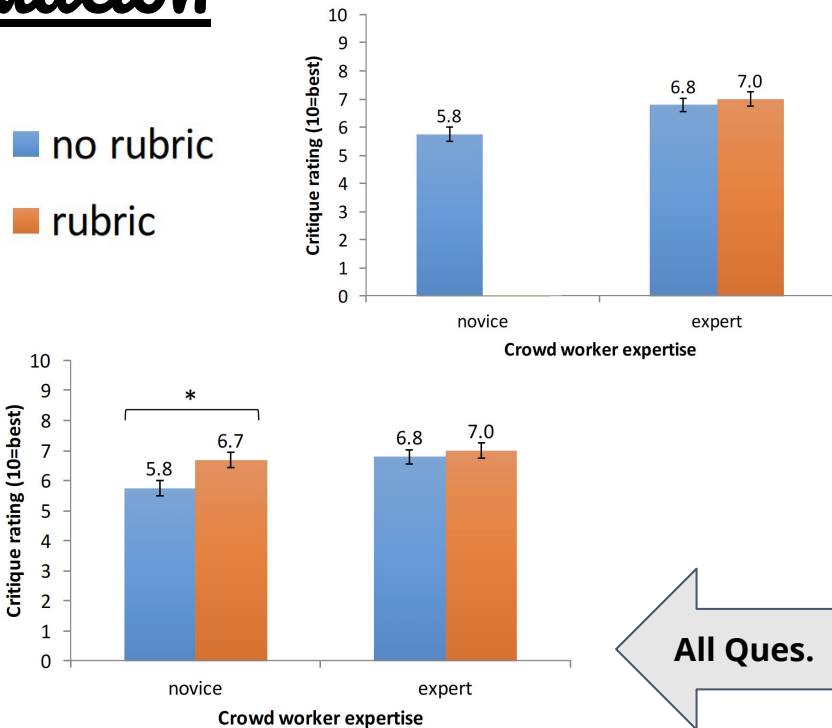- More feedback providers ⇒ more issues identified
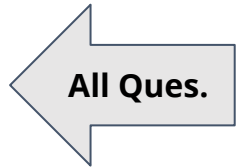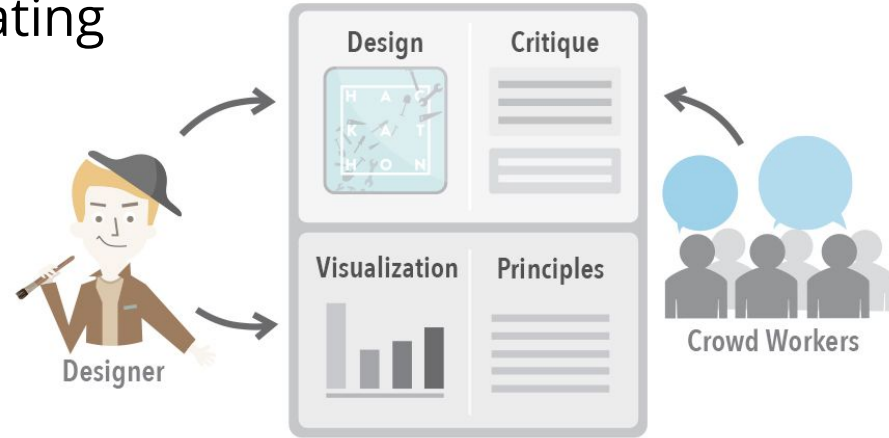
8b. What role do rubrics play in evaluation and critiques? How did novices compare with experts?

Structured / Directed Evaluation

Main Findings

- **Without rubrics**:
  - Novices do worse than experts

- **With rubrics**:
  - Novices critique ratings improve

All Ques.

9. What is CommunityCrit? What sorts of tasks do people participate in? Give examples.

Online Urban Planning

- **CommunityCrit** ⇒ allows <u>the public</u> to participate in the *urban design process*
  - Allow for more participation
- Collect short feedback (**micro-tasks and questionnaire form**)
  - Expand 14th Street Promenade in East Village ("**El Nudillo**" or "**The Knuckle**")
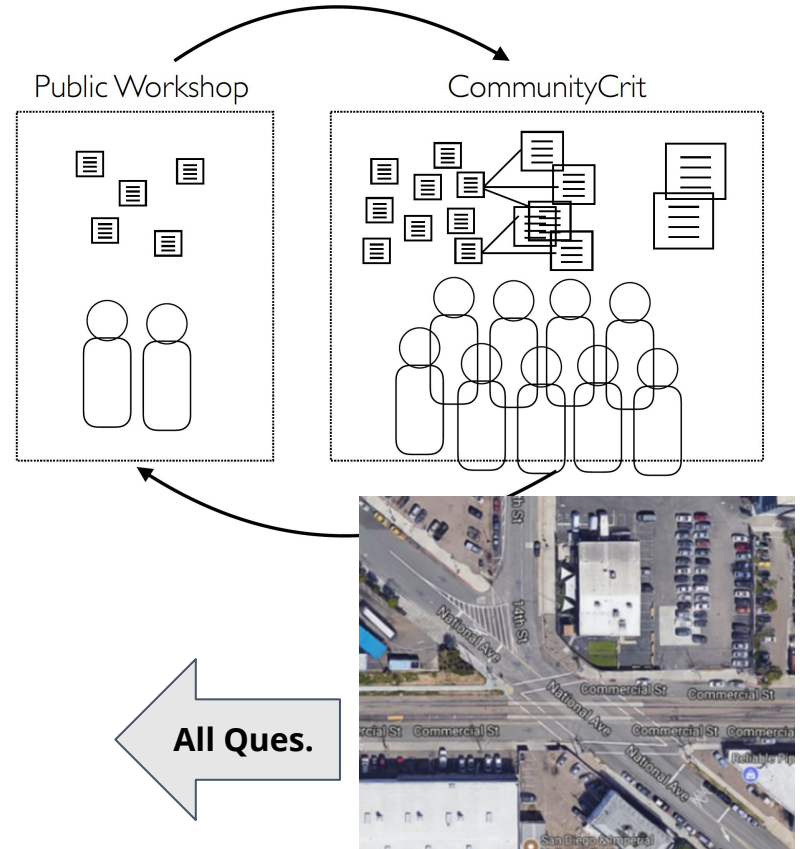
Public Workshop   CommunityCrit

All Ques.

10. What is PeerPresents? What features of PeerPresents are important for crowdsourcing and data mining?

PeerPresents

- **PeerPresents** = Pilot study ⇒ **in-class peer review** tool
  - Provide **feedback in real time** w/ structured activity
- Results: _Good_ scale but _poor_ diversity

All Ques.

11. What is the advice given by Dr. Hollan?

| DR. HOLLAN'S ADVICE	TRANSLATION
If you think you can't, almost certainly you won't	*What you think matters*
To do significant things, you have to neglect other things	*Prioritize - it's impossible to do it all!*
Take time to think important thoughts	*Thinking / daydreaming is not a waste of time*
Be thoughtful about who you spend time with	*Surround yourself with positive & like-minded individuals*
Refuse to let the urgent always drive out the important	*Make time to do the things that help you reach your goals*
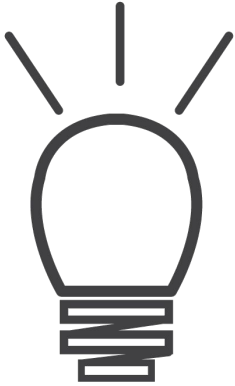
W I S D O M

DSGN 1: Design of Everyday Things

- *You will learn to observe, analyze, and understand the role design plays in our lives.*
- Examples:
  - How we queue at an ATM
  - Why we decide to grasp an object in a certain way

The DESIGN of EVERYDAY THINGS

DON NORMAN

All Ques.
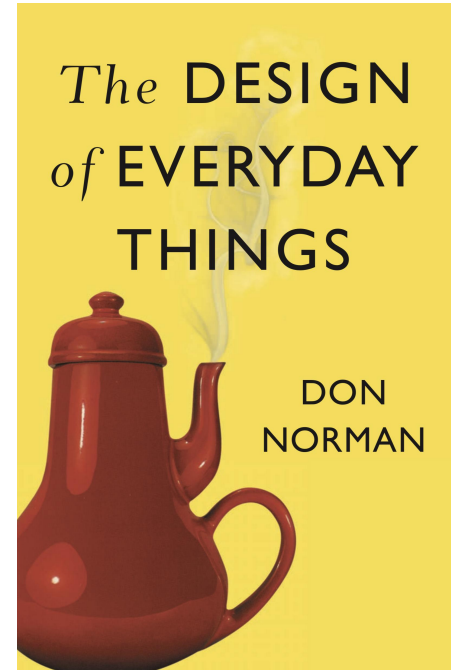
Design - behavior

13. How can algorithms influence the political environment? Which algorithm was mentioned in lecture?

Cognitive Consequences Of Technology

Deep learning ⇒ influence political environment
Verified vs. altered video - what were the differences?
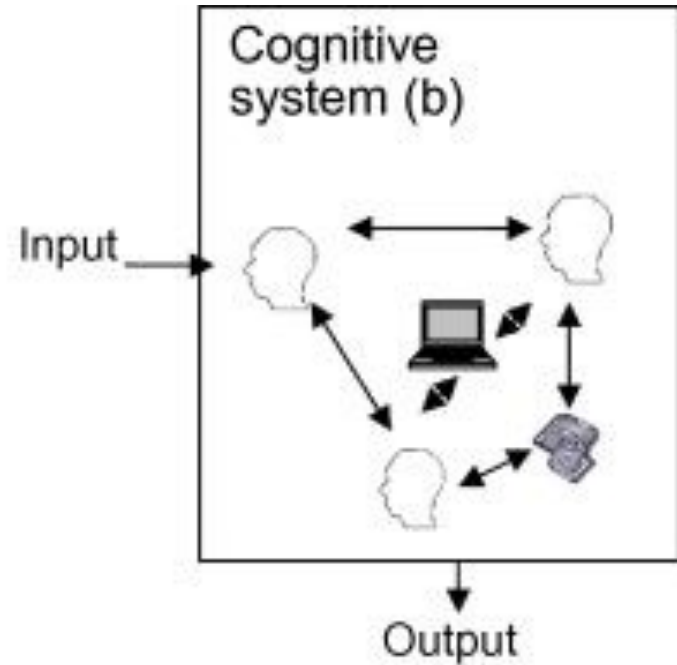

Verified video

Think critically!

Don't believe everything you see!

All Ques.

14. How does "thinking with computers" force us to re-conceptualize what "thinking" means?
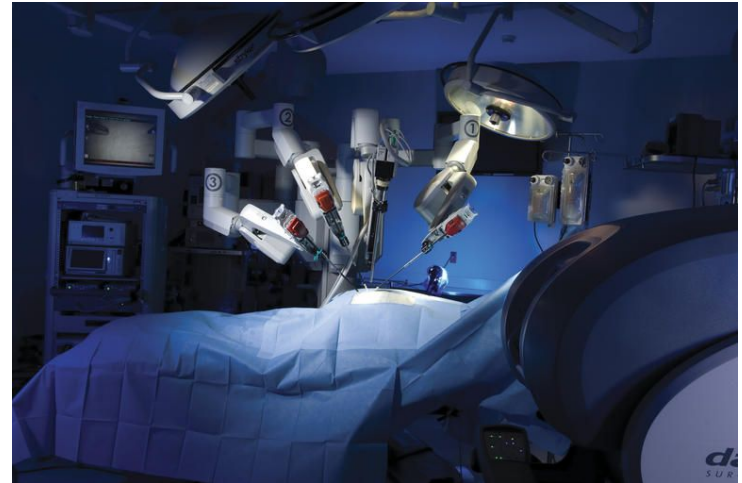
Situated Activity

- Interaction between the world and the head
- Computers facilitated such interactions
- Digital world is more realistic

Cognitive system (b)

Input

Output

All Ques.

15. In what ways are computers a special kind of tool? What did Abe Davis' research show, and how could you imagine it changing our lives? How else have recent advances in computers changed our lives?

- First meta-medium to assist thoughts
- More degrees of freedom
- Create new medium, model
- Virtual world
- Eg: robotic surgery

15. In what ways are computers a special kind of tool? What did Abe Davis' research show, and how could you imagine it changing our lives? How else have recent advances in computers changed our lives?

- Perceptual invisible motion recorded in a video
- Recover intelligible human speech from silent video of an object

Computers can better detect motion

16. How does technology change the boundaries between the physical (biological) and digital world? What were the lessons of the development of ObjecTop?

ObjecTop: Occlusion Awareness of Physical

M. Khalilbeigi (Darmstadt), J. Steimle (MIT), and J. Hollan (UCSD)

INTERACTION DESIGN
beyond human-computer interaction
2nd Edition
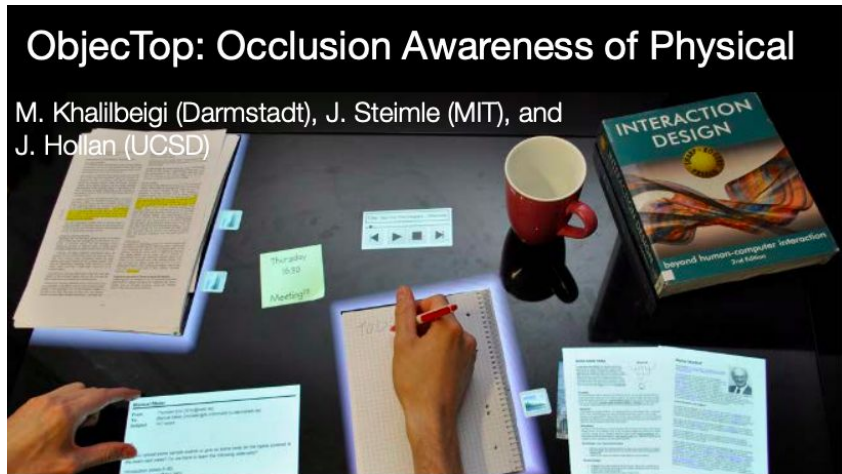
Boundary between physical and digital worlds is becoming permeable

KINECT

17. What is "Spore"? How was it used?

Real Time Strategy Game

- Video recording people playing games
- We don't have accurate views on what happens
- We don't know enough what people really do → want to design a system to support people

18. What are the characteristics associated with "smart" teams?

Collective Intelligence

1. Equal member contribution
2. Correlate w/ high scores on "Reading the Mind in the Eyes"
   a. Measures "emotion reading ability" for images of faces with *only* the eyes visible
   b. Theory of Mind (ToM)
3. Teams with more women outperformed teams with more men (presumably since women are generally better at "mind reading")

19. How does "Theory of Mind" and emotion-reading facilitate group work?

# Adapting To Changing Circumstances

- Not just ability to read facial expressions
  - A more general ability called "**Theory of Mind**" (**ToM**) ⇒ *consider / keep track of what other people feel, know, and believe*

- **ToM ability** is strongly correlated with **efficacy of the group**

20. What are ChronoViz and Activity Trails?

ChronoViz

Enables researchers to visualize and flexibly navigate time-based data from multiple digital sources (e.g. video and audio).

ChronoViz
A system for supporting navigation of time-coded data
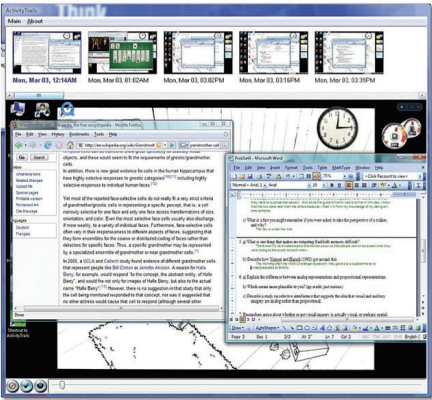

Activity Trails

Transparently records desktop activity, allowing users to conduct their work naturally *without interference*.

21. What is ubiquitous capture? What is "lifelogging" and how it is associated with our lives?

Unobtrusive Recording

- Sensors and digital recording devices.
- Enabling examination of the structure & fine detail of activities.
- **Lifelogging**: archive all of our activities → remember everything we have learned and experienced.

All Ques.
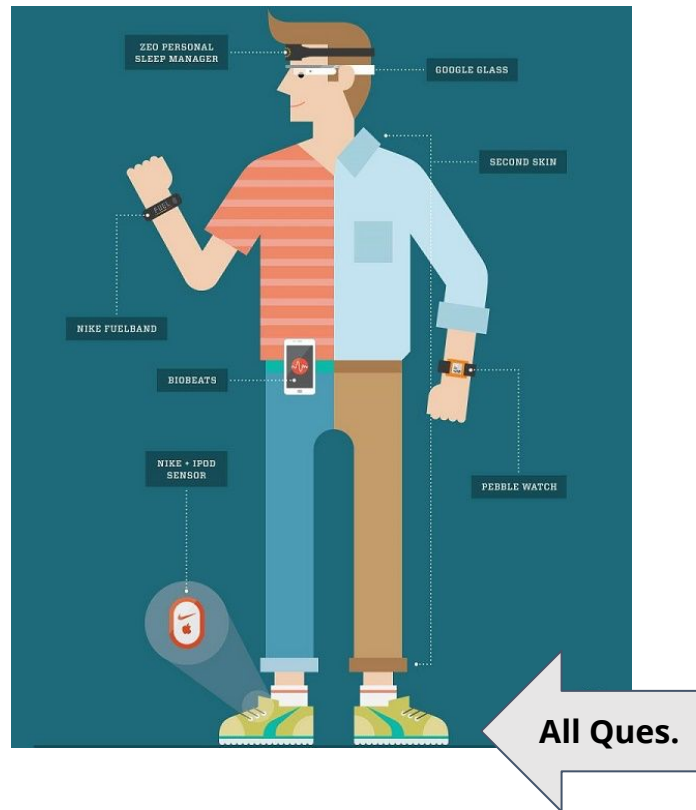
Last Quiz Time!

- No talking, signaling, or communicating of any kind.
- Put away your books, notes, computers, phones, etc.
- Pen or pencil is okay (just make sure it's a black pen and you press hard with a pencil).
- Write your name in the "Name" box, write and circle in your PID, and sign the academic integrity agreement.

- Bubble in this section.
- Please have your student ID out when you turn in your quiz!

Write and circle in your PID

Write down your name here

UC SAN DIEGO – DEPARTMENT OF COGNITIVE SCIENCE

STUDENT PID NUMBER									
A/U									
[0]	⓪	⓪	⓪	⓪	⓪	⓪	⓪	⓪	⓪
[1]	①	①	①	①	①	①	①	①	①
[2]	②	②	②	②	②	②	②	②	②
[3]	③	③	③	③	③	③	③	③	③
[4]	④	④	④	④	④	④	④	④	④
[5]	⑤	⑤	⑤	⑤	⑤	⑤	⑤	⑤	⑤
[6]	⑥	⑥	⑥	⑥	⑥	⑥	⑥	⑥	⑥
[7]	⑦	⑦	⑦	⑦	⑦	⑦	⑦	⑦	⑦
[8]	⑧	⑧	⑧	⑧	⑧	⑧	⑧	⑧	⑧
[9]	⑨	⑨	⑨	⑨	⑨	⑨	⑨	⑨	⑨

Last NAME, First NAME
COURSE NUMBER
COGS 1
SPRING 2019
Dr. Mary ET Boyle
Quiz A
April 9-12, 2019
Quiz VERSION

A	B	C	D	E	F	G	H
■	Ⓑ	Ⓒ	Ⓓ	Ⓔ	Ⓕ	Ⓖ	Ⓗ

Section you are taking this quiz:

Please Bubble only one!

- [1] ① Monday @ 9 Lexi D.
- [2] ② Monday @ 4 Elena
- [3] ③ Wednesday @ 2 Adrian
- [4] ④ Wednesday @ 3 Audrey
- [5] ⑤ Wednesday @ 5 Devansh
- [6] ⑥ Friday @ 11 Lori
- [7] ⑦ Friday @ 12 Elena
- [8] ⑧ Friday @ 1 Lexi F.

Bubble in the current section

Quiz will not be graded without Academic Integrity Signature.

ACADEMIC INTEGRITY

By taking this quiz, you agree that you will follow
ALL UCSD ACADEMIC INTEGRITY policies.
It is YOUR responsibility to know and understand all of the policies.
Failure to follow all UCSD Academic Integrity policies could result in expulsion from UCSD.
DO NOT DISCUSS THIS QUIZ CONTENTS WITH FELLOW STUDENTS!!!

Sign and date here

_____
Signature   Date

Your **signature above certifies** that you *will follow* and that you know that
you will suffer the consequence for ANY academic integrity violation.

YOUR ANSWERS GO HERE

	[A]	[B]	[C]	[D]	[E]
1	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ
2	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ
3	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ
4	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ
5	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ
6	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ
7	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ
8	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ
9	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ

Bubble in the answers