

# HCI, Robots, Online Education

- Human Computer Interfaces/Interaction
- Robots everywhere?
- Is Education the next “industry” to be disrupted by the web?

# Designing Good Interfaces is Hard

- How do you turn off a Windows computer?

When the next slide appears immediately shout out the color you see. Ignore any words on the screen.

**BLUE**

**GREEN**

**RED**

**PURPLE**





**YELLOW**

**PURPLE**

**GREEN**

**BLUE**

The problem is sending mixed signals.

What are some other examples of difficult to use computer interfaces?

# Multi-touch



# From Scroll to Book



When you're used to paper rolls it takes some time to convert to turn the pages of a - beek.

When Jeff Han (multi-touch guy) said the interface should just “disappear” he was referring to what?

- A. A menu bar that auto-hides.
- B. A keyboard that appears just when you need it.
- C. An interface where the user doesn't think about the interface and the computer just does what the user expects.
- D. All of the A-C.
- E. None of A-C.



# Robots

Daniel Mellinger  
Alex Kushleyev



When operating in a group, the robots

- A. are being *autonomous* because they each follow their own program and are not controlled by a human.
- B. are demonstrating a *distributed* algorithm because they each operate based on local sensor information rather than a central leader.
- C. Both A and B.
- D. Neither A nor B.

# Robots



# Los Angeles Times

Editorial

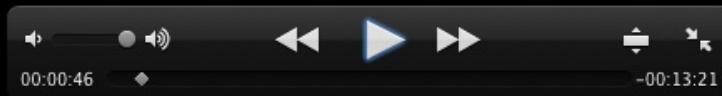
## When droids take your job

*A duo from MIT argue that rapid computer advances may be vaporizing careers faster than workers can train for new ones.*

**November 28, 2011**

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The stubbornly high unemployment rate has left policymakers wondering whether there's something more at work than just an unusually steep recession. Have the country, its businesses and its markets changed in some fundamental way, leaving millions of Americans with skills that are no longer needed? Economists are sharply divided on that point, but two from the Massachusetts Institute of Technology make a compelling argument that the technology revolution is vaporizing careers faster than many Americans can embark on new ones.



Andrew McAfee claims that technologies like Siri and Watson will improve according to Moore's Law. He said in 6 years they won't be 2 or 4 times better but 16 times better. This means that the period of Moore's Law (the frequency at which technology doubles in power) as applied here is ...

- A. 1 year
- B. 1.5 years
- C. 2 years
- D. 4 years
- E. 6 years

# The Year of the MOOC

“The shimmery hope is that free courses can bring the best education in the world to the most remote corners of the planet, help people in their careers, and expand intellectual and personal networks.”

*Laura Pappano*

NY Times 11/2/2012

# Wendy Brown on Online Education

“If this [student debt from courses they didn’t complete] is the source of revenue generation Edley’s proposal promises, we ought to ask: is this [online education] an ethically acceptable way to close UC’s funding gap?”

10/11/2010

# Bold Experiment

“Giving away content free or cheaply on the Internet has already weakened the financial foundations of newspapers and magazines, postal mail, retail sales, bookstores, and movie distribution, and is now threatening book publishing. The university appears to be the next major institution that the Internet will transform.”

*Beryl Benderly*

Prism 10/2012



# The Year of the MOOC

“Dr. Stavens sees a day when MOOCs will disrupt how faculty are attracted, trained and paid, with the most popular ‘compensated like a TV actor or a movie actor.’”

*Laura Pappano*

NY Times 11/2/2012

# The Campus Tsunami

“Now online activity is at the core of how these schools [elite universities] envision their futures... What happened to the newspaper and magazine business is about to happen to higher education: a rescrambling around the Web.”

*David Brooks*

NY Times 5/3/2012

# The Coming Tsunami in Educational Technology

“Just as technology disrupted and transformed the newspaper and music industries, it is now poised to wreak havoc upon another established industry: higher education.”

*Jack Rosenberger*

BLOG@CACM 7/23/2012

Commenting on Stanford President John Hennessy's address to the CRA's 40th Anniversary Conference at Snowbird

# The Campus Tsunami

“If a few star professors can lecture to millions, what happens to the rest of the faculty? Will academic standards be as rigorous? What happens to the students who don’t have enough intrinsic motivation to stay glued to their laptop hour after hour? How much communication is lost — gesture, mood, eye contact — when you are not actually in a room with a passionate teacher and students? ”

*David Brooks*

NY Times 5/3/2012

# Will MOOCs Destroy Academia?

“If I had my wish, I would wave a wand and make MOOCs disappear, but I am afraid that we have let the genie out of the bottle.”

*Moshe Y. Vardi, Editor-in-chief CACM 11/2012*



# The Online Revolution: Education for Everyone

Daphne Koller & Andrew Ng  
Stanford University & Coursera



- MOOC vs Book?
- Self forming communities
- data driven mode
  - what are common misconceptions
  - same wrong answer by many – targeted feedback
- Use tech to achieve 2 sigma results similar to one-on-one teaching

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A number of prominent people, mostly from outside of computer science, have shared their concerns that AI systems could threaten the survival of humanity.

In particular, we call out five classes of risk: bugs, cybersecurity, the “Sorcerer’s Apprentice,” shared autonomy, and socioeconomic impacts.

CACM October 2015 Viewpoints “Rise of Concerns about AI”

While I had heard such talk before, I had always felt sentient robots were in the realm of science fiction. But now, from someone I respected, I was hearing a strong argument that they were a near-term possibility. I was taken aback, especially given Ray's proven ability to imagine and create the future. I already knew that new technologies like genetic engineering and nanotechnology were giving us the power to remake the world, but a realistic and imminent scenario for intelligent robots surprised me.

“First let us postulate that the computer scientists succeed in developing intelligent machines that can do all things better than human beings can do them. In that case presumably all work will be done by vast, highly organized systems of machines and no human effort will be necessary. Either of two cases might occur. The machines might be permitted to make all of their own decisions without human oversight, or else human control over the machines might be retained.

“If the machines are permitted to make all their own decisions, ... the fate of the human race would be at the mercy of the machines. ... the human race might easily permit itself to drift into a position of such dependence on the machines that it would have no practical choice but to accept all of the machines' decisions. ... Eventually a stage may be reached at which the decisions necessary to keep the system running will be so complex that human beings will be incapable of making them intelligently. At that stage the machines will be in effective control. People won't be able to just turn the machines off, because they will be so dependent on them that turning them off would amount to suicide.

“On the other hand it is possible that human control over the machines may be retained. In that case the average man may have control over certain private machines of his own, such as his car or his personal computer, but control over large systems of machines will be in the hands of a tiny elite - just as it is today, but with two differences. . . . These engineered human beings may be happy in such a society, but they will most certainly not be free. They will have been reduced to the status of domestic animals.”

Bill Joy quoting from Kurzweil, quoting Kaczynski.

The passage Kurzweil quotes is from Kaczynski's Unabomber Manifesto, which was published jointly, under duress, by The New York Times and The Washington Post to attempt to bring his campaign of terror to an end. I agree with David Gelernter, who said about their decision:

"It was a tough call for the newspapers. To say yes would be giving in to terrorism, and for all they knew he was lying anyway. On the other hand, to say yes might stop the killing. There was also a chance that someone would read the tract and get a hunch about the author; and that is exactly what happened. The suspect's brother read it, and it rang a bell.

"I would have told them not to publish. I'm glad they didn't ask me. I guess."

(Drawing Life: Surviving the Unabomber. Free Press, 1997: 120.)