



Artificial intelligence and VR in on-line learning

Donald Clark



social



game



mobile



ALPHAGO
00:50:09



Google DeepMind
Challenge Match



LEE SEDOL
00:44:06

WATCH: The whole match in less than a minute



social



game



mobile



social

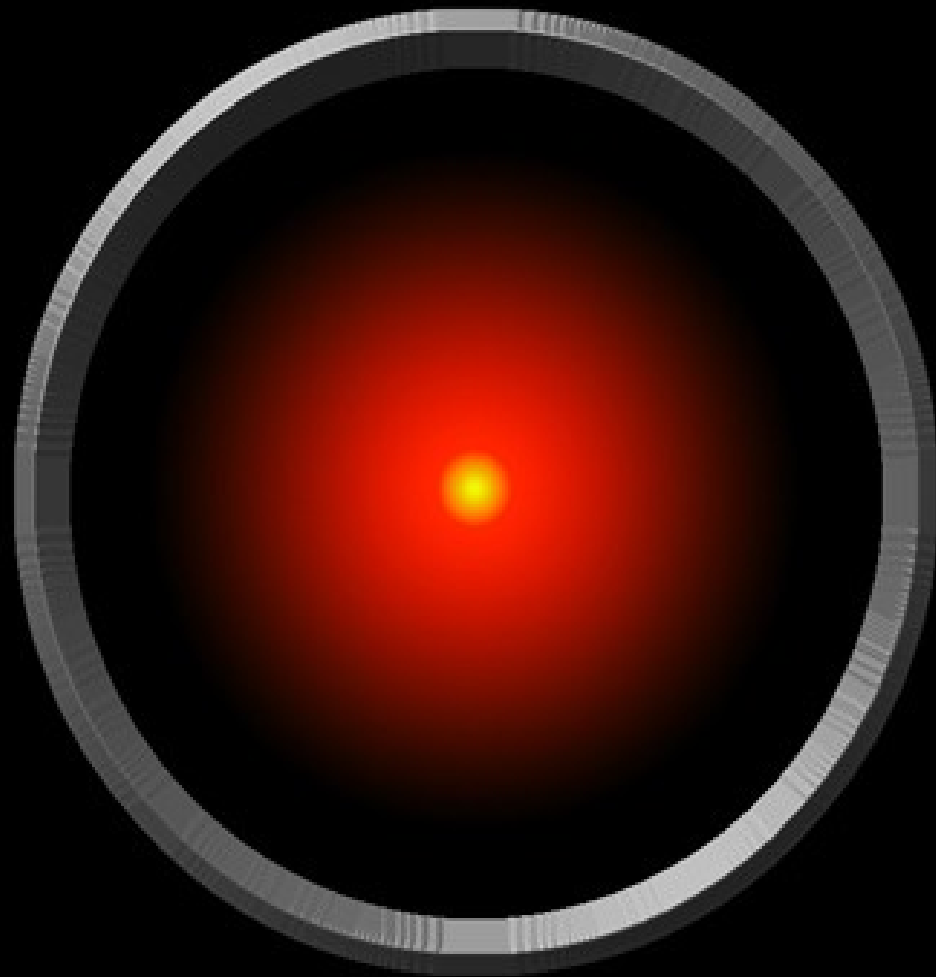


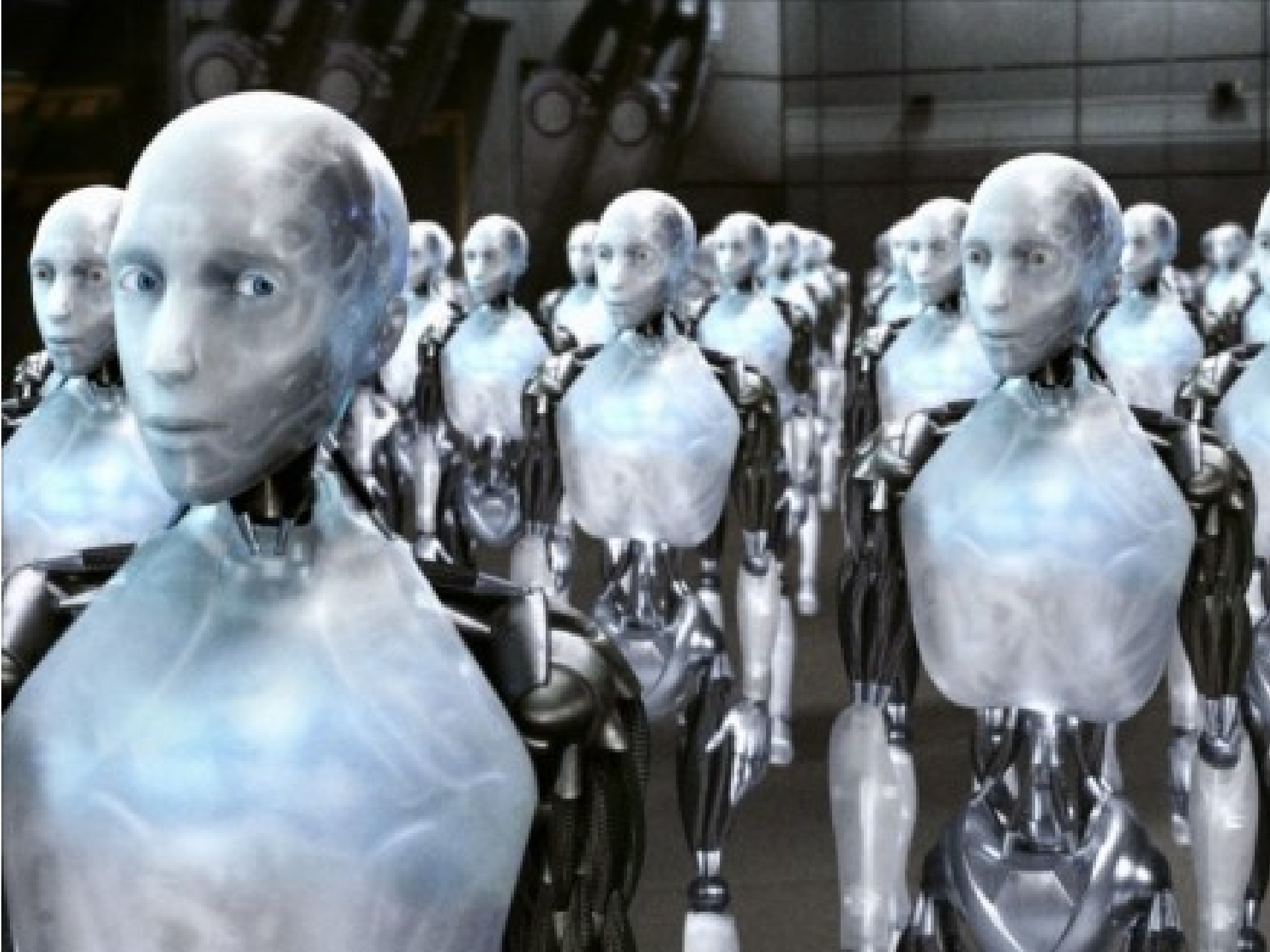
game



mobile

I'm sorry Dave,
I'm afraid I can't do that



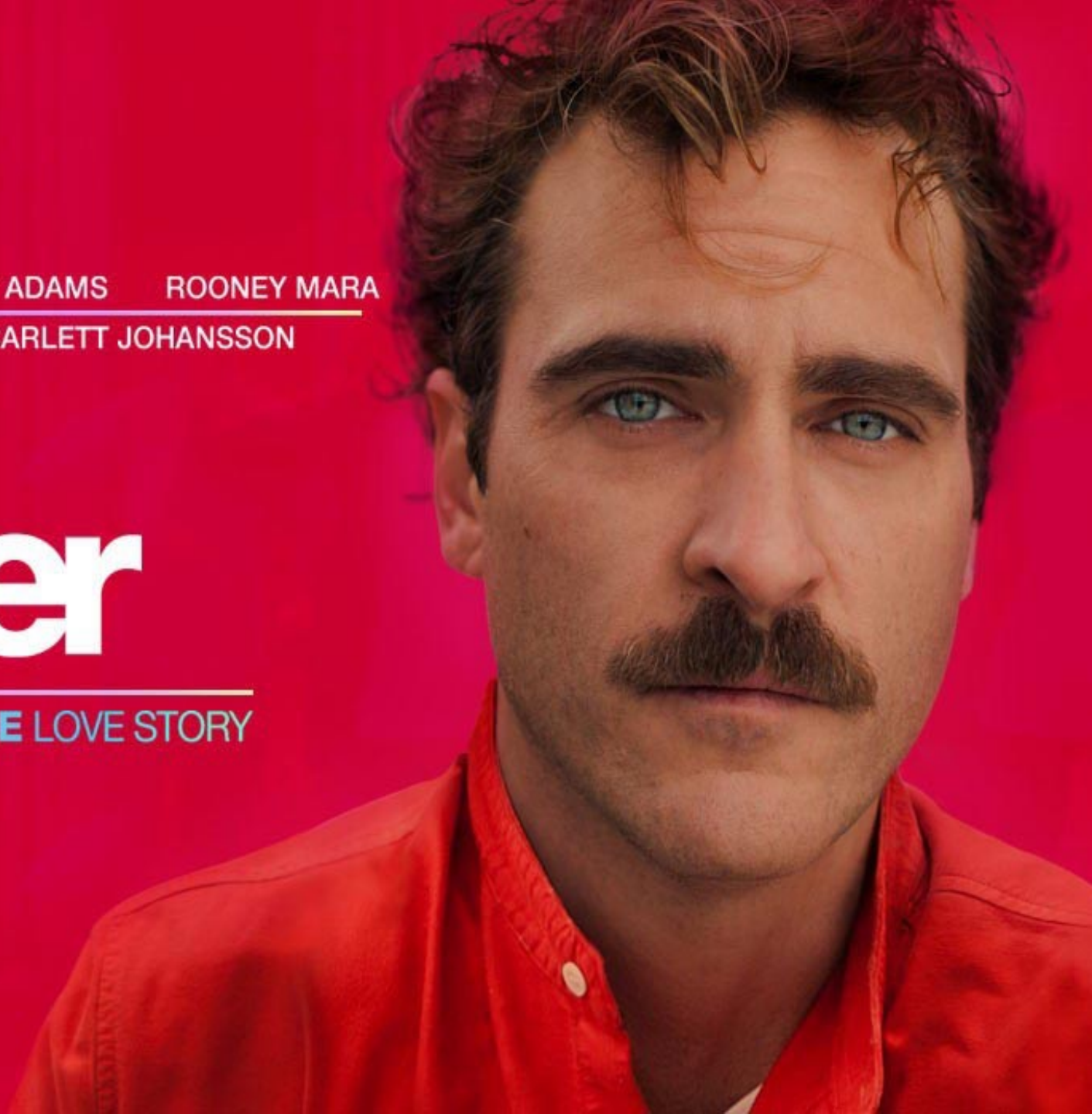




JOAQUIN PHOENIX AMY ADAMS ROONEY MARA
OLIVIA WILDE AND SCARLETT JOHANSSON

her

A SPIKE JONZE LOVE STORY



WRITTEN AND DIRECTED BY
ALEX GARLAND THE WRITER OF
28 DAYS LATER

EX_MACHINA

THERE IS NOTHING MORE HUMAN
THAN THE WILL TO SURVIVE

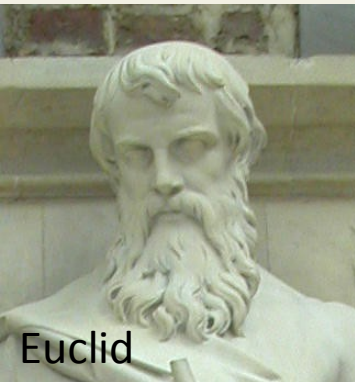
COMING SOON

UNIVERSAL PICTURES INTERNATIONAL and FILM 4 PRESENT A DNA FILMS PRODUCTION "EX_MACHINA" STARRING DOMINALL GLEESON, ALICIA YKANDER, AND OSCAR ISAAC
WRITTEN BY FRANCIS MANSLER PRODUCED BY BEN SALISBURY AND GERTY BARROW EDITED BY GLENN FREEMANTLE COSTUME DESIGNER SAMMY SHELDON DIRECTOR OF PHOTOGRAPHY MARK OUSBY
EXECUTIVE PRODUCERS MARK DAY PRODUCED BY RICH HARDY EXECUTIVE PRODUCERS JEANNE SABA EXECUTIVE PRODUCERS CAROLINE LEVY EXECUTIVE PRODUCERS SCOTT BROWN, ELI BUSH, AND TESSA ROSS
DIRECTED BY ANDREW MACDONALD AND ALISON REICHER PRODUCED BY ALEX GARLAND
LIONEL FILM4

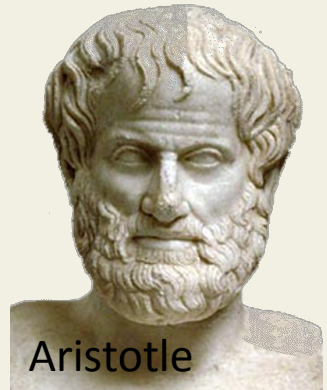
www.exmachinafilm.com

[/ExMachinaMovie](https://www.facebook.com/ExMachinaMovie)

History of algorithms



Euclid



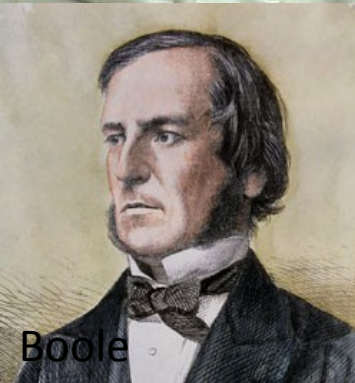
Aristotle



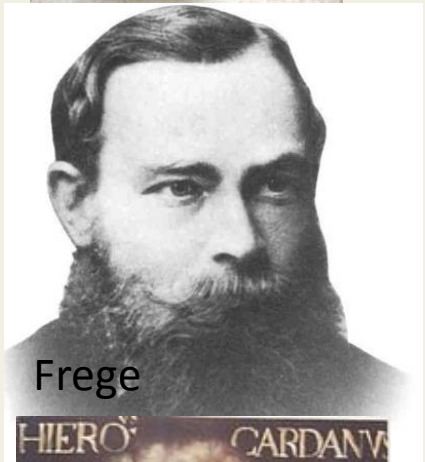
Al Kwarizmi



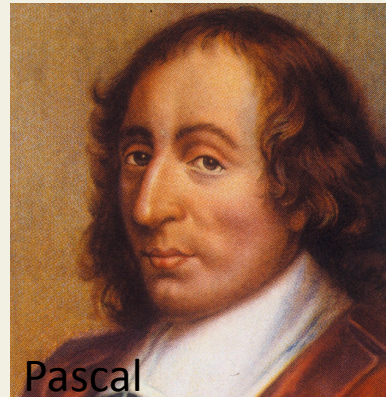
Descartes



Boole



Frege



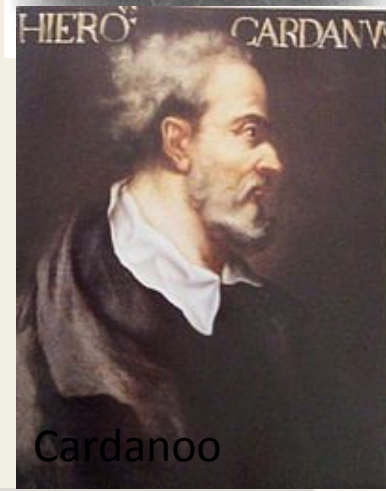
Pascal



Fermat



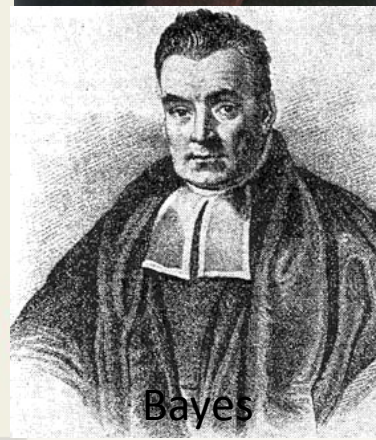
Laplace



Cardano



Bernoulli



Bayes

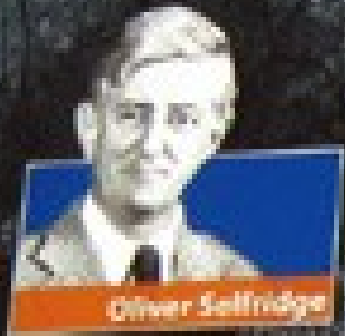


social



gam

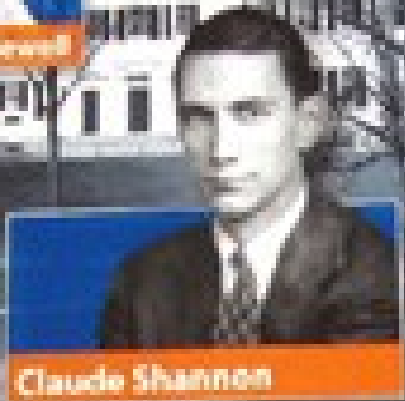
Birthplace of modern AI (1956)



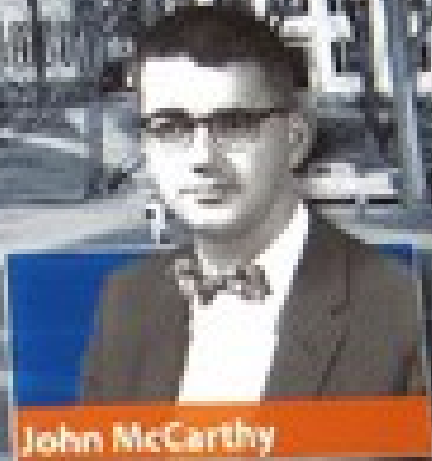
Oliver Selfridge



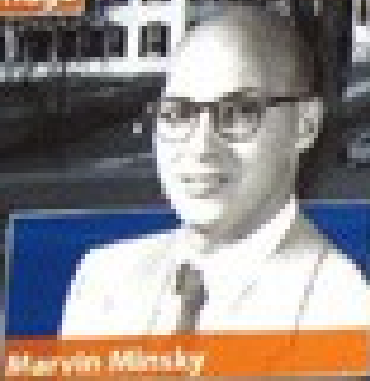
Allan Newell



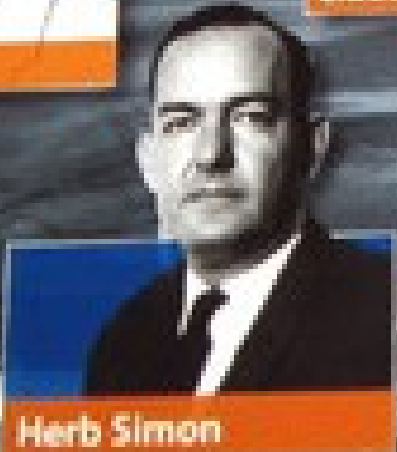
Claude Shannon



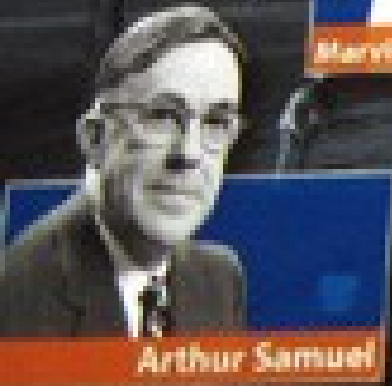
John McCarthy



Marvin Minsky



Herb Simon



Arthur Samuel

World Wide Web



AI in learning

LEVEL	1	Tech
LEVEL	2	Assistive
LEVEL	3	Analytic
LEVEL	4	Hybrid
LEVEL	5	Autonomous

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AR

Magic Leap raises \$793 valued at \$4.5B!



Chris Piech's team (Stanford & Google)

$$x^4 - \underbrace{x^2\sqrt{6} + x^2\sqrt{2}} - \sqrt{12}$$

$$x^4 + (\sqrt{2} - \sqrt{6})x^2 - 2\sqrt{3}$$

$$x^4 + \sqrt{2}x^2 - \sqrt{6}x^2 - \sqrt{12}$$

$$\sqrt{12} = \sqrt{3} \cdot \sqrt{4}$$

$$2\sqrt{3}$$

F O I L

Why important?
Better than a teacher



"I think there is a world market for maybe five computers"

Watson (IBM)

Quote is bullshit, never happened!



IBM Watson Analytics

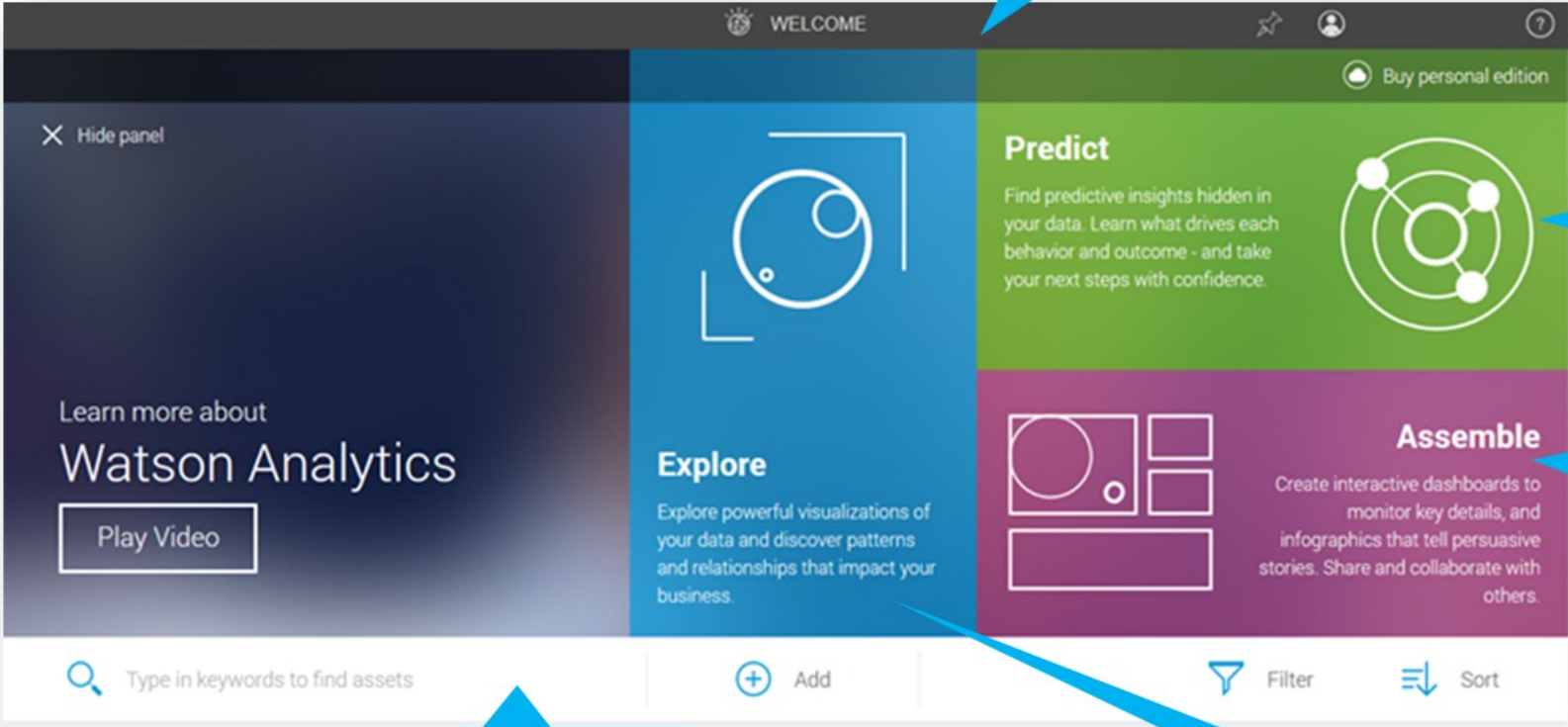
Quick start intuitive interface

Key business driver insights

Dashboard and storytelling authoring


Easy data upload and search capabilities

Natural language dialogue



AI in learning

LEVEL	1	Tech
LEVEL	2	Assistive
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The Google logo is centered in the upper half of the slide. It features the word 'Google' in its signature multi-colored font: blue 'G', red 'o', yellow 'o', blue 'g', green 'l', and red 'e'. A small 'TM' trademark symbol is located to the upper right of the 'e'.
$$PR(p_i; t + 1) = \frac{1 - d}{N} + d \sum_{p_j \in M(p_i)} \frac{PR(p_j; t)}{L(p_j)}$$

18. $-(m - 2) + 3m - 6$
18. $13w - 2(3 - 6w)$

21. $9x - 7 = 13 - 4x$

$x = \frac{20}{13}$

chairs sells for \$20. The table price of the table is \$13. Find the price of the table.

odd integers such that the sum of the integers is 20.

Steps →

- 23. A dining table with four chairs more than the combined price of each chair.
- 24. Find three consecutive odd integers such that the sum of the largest is 162.
- 25. Give a reason for each step of the following.

Theorem: $0 = -0$ In words, zero is the additive inverse of zero.

$0 + 0 = 0$
 $0 + (-0) = 0$
 $-0 + 0 = 0$



Xiaoce (Little Ice)

3 days 1.5 m people

0.5 billion conversations

Average 60 x per month

850,000 followers

More it's used smarter it gets

Journalism: Algorithms more powerful than news editors

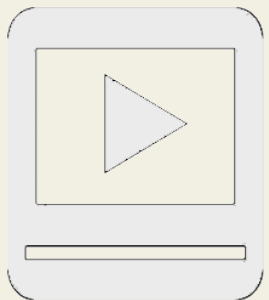
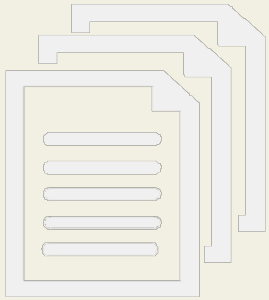


UPWORTHY

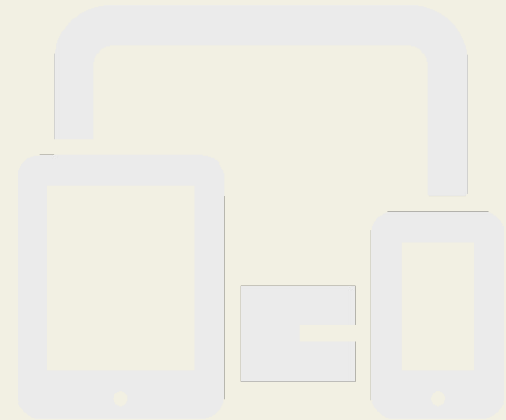


1 CLICK TEACHER





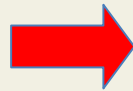
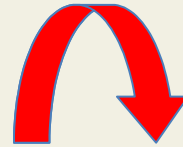
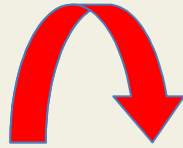
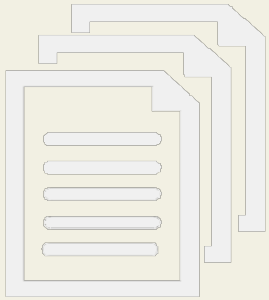
→ WildFire →



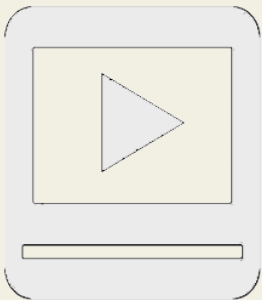
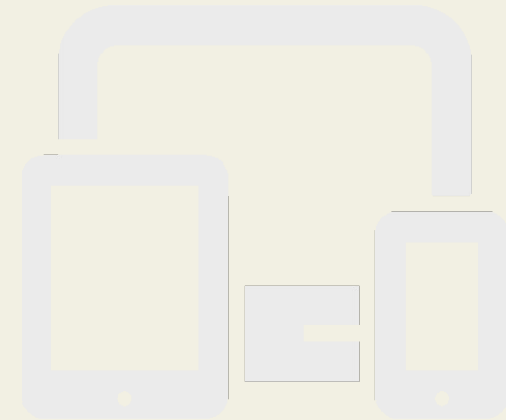
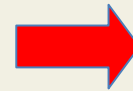
WildFire TEXT

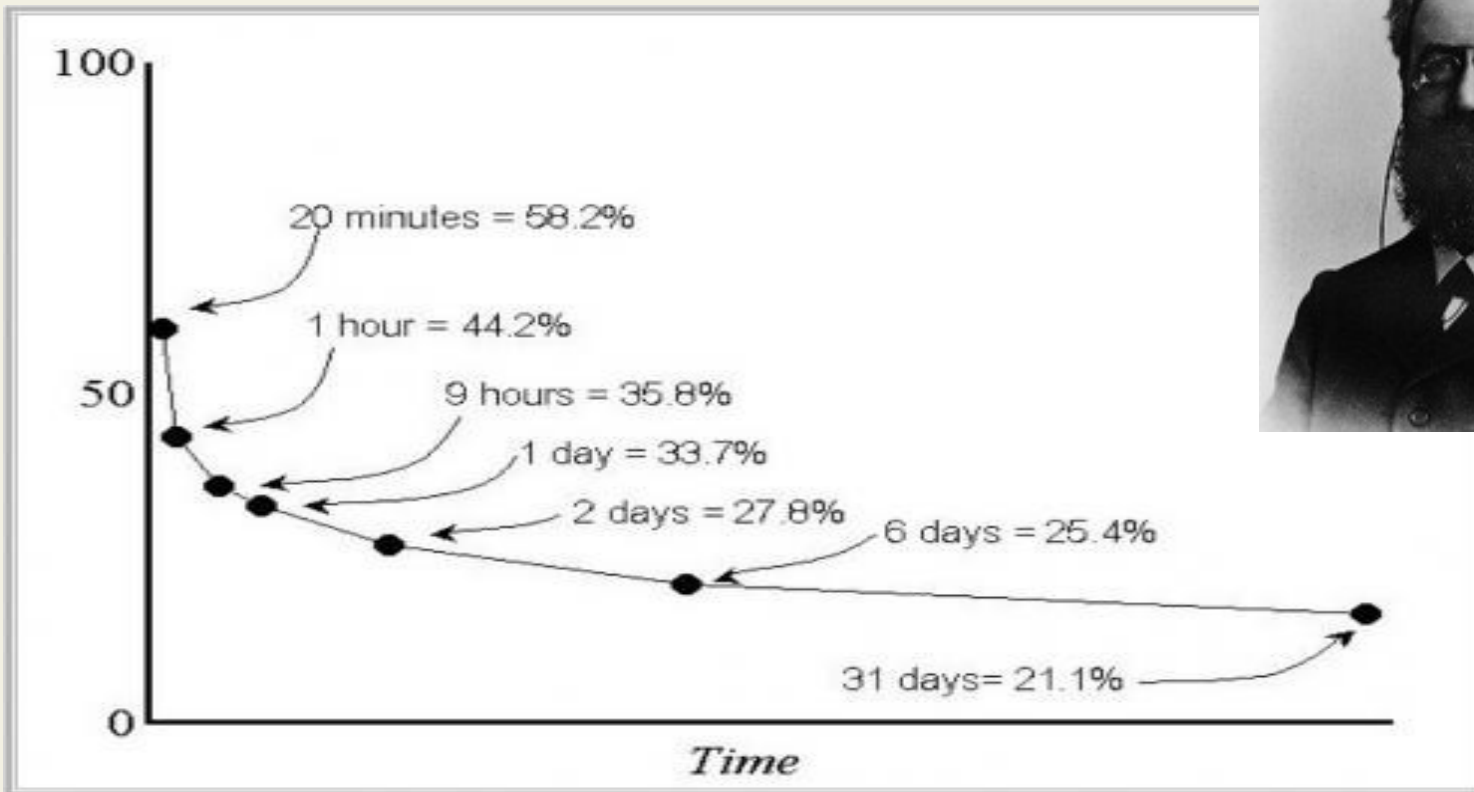
WildFirePPT

WildFireVIDEO



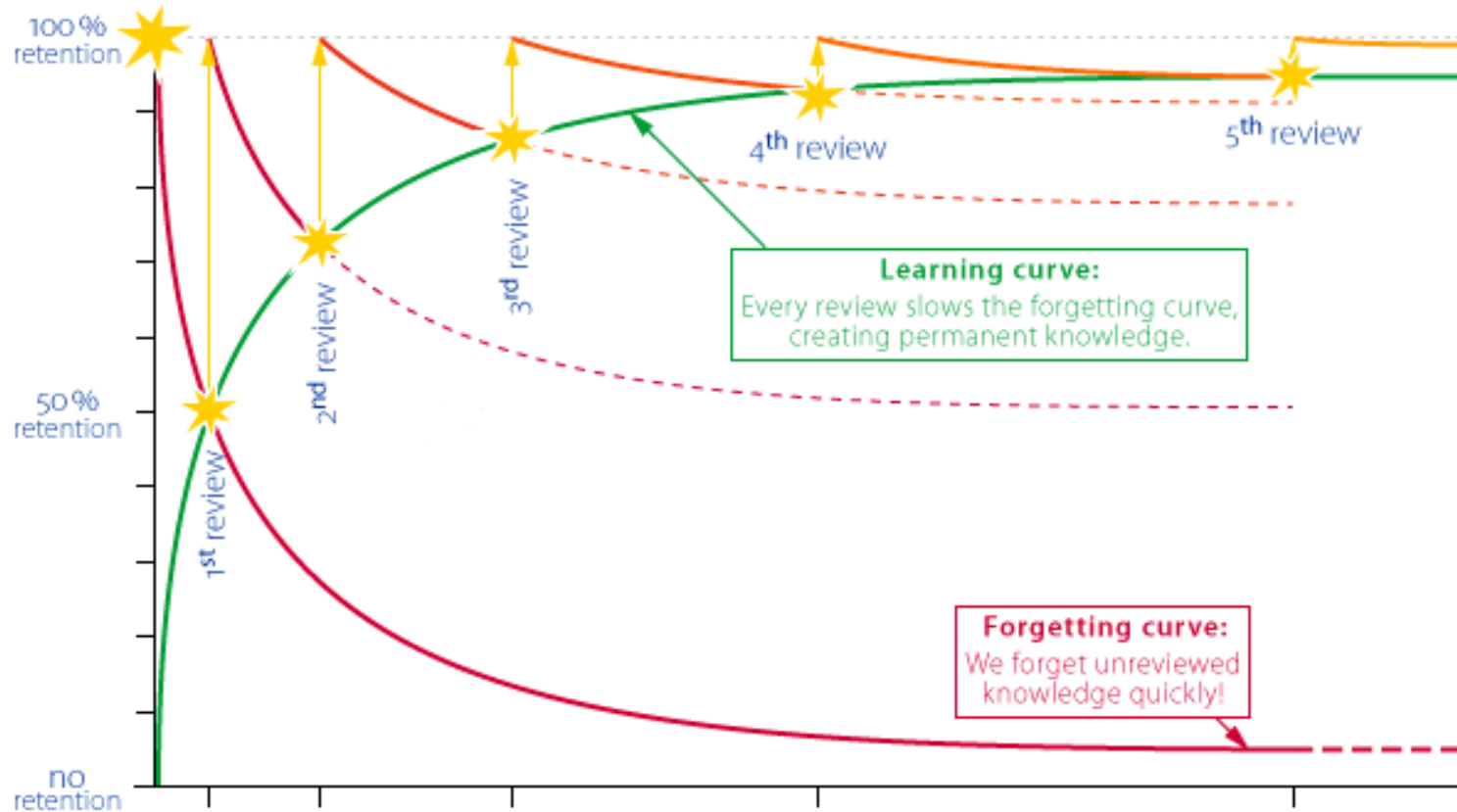
WildFire





Why spaced review works

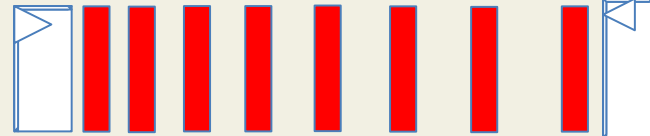
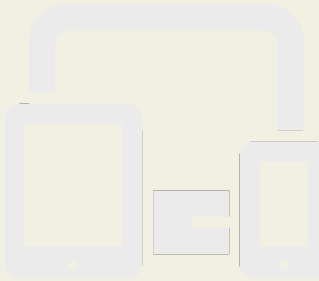
www.LearnThat.org, a LearnThat Foundation project



...then spaced practice



→ WildFire →



wildfirelearning.co.uk



ONLINE ASSESSMENT



AUTOMATED ESSAY MARKING



"If only I had a few more papers to grade" said no teacher ever.



AI in learning

LEVEL	1	Tech
LEVEL	2	Assistive
LEVEL	3	Analytic
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eHarmony®

Free to Review Your Matches

Already on Facebook? [Connect with Facebook](#)

First Name:

First name only please!

I'm a: **Woma** ↓ seeking **Men** ↓

Zip Code:

Country: **United States** ↓

Email:

Note: Your email is used to log back in

Confirm Email:

Password:

Must be at least 5 characters

How did you hear about us? **Please select...** ↓

[Find My Matches](#)



Date Smarter, Not Harder

You're not looking for lots of dates, just better ones. And that's where we come in. Take our Relationship Questionnaire to define what you are looking for, and we'll help you find the most promising matches. People whose goals, values and personality traits most complement you. **Let's get started.**



Erika
eHarmony member

How We Match You
Learn more
→

amazon.com

Recommended for You

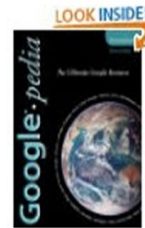
Amazon.com has new recommendations for you based on [items](#) you purchased or told us you own.



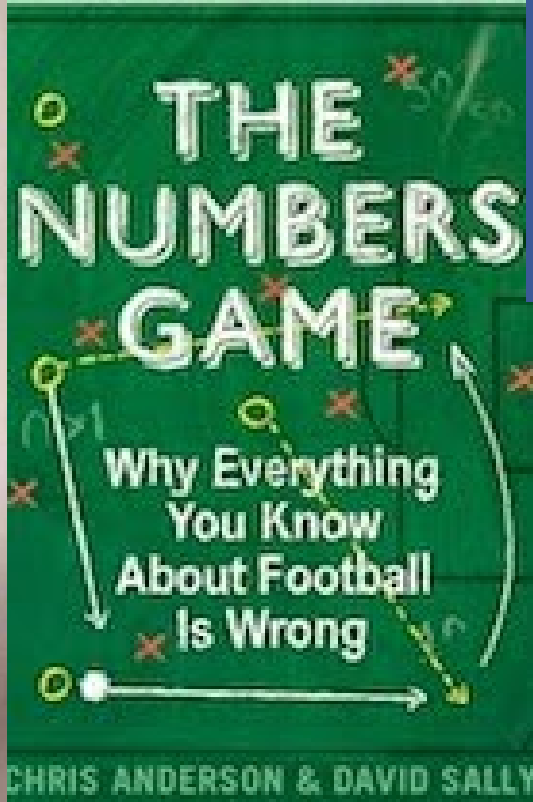
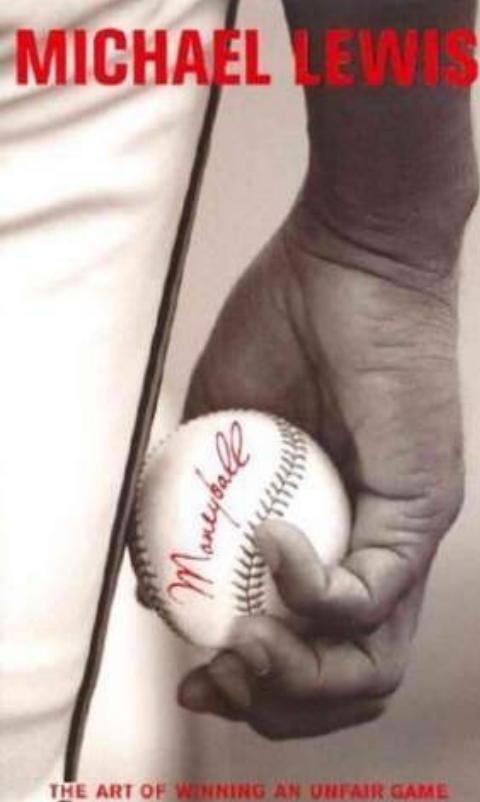
[Google Apps Deciphered: Compute in the Cloud to Streamline Your Desktop](#)



[Google Apps Administrator Guide: A Private-Label Web Workspace](#)

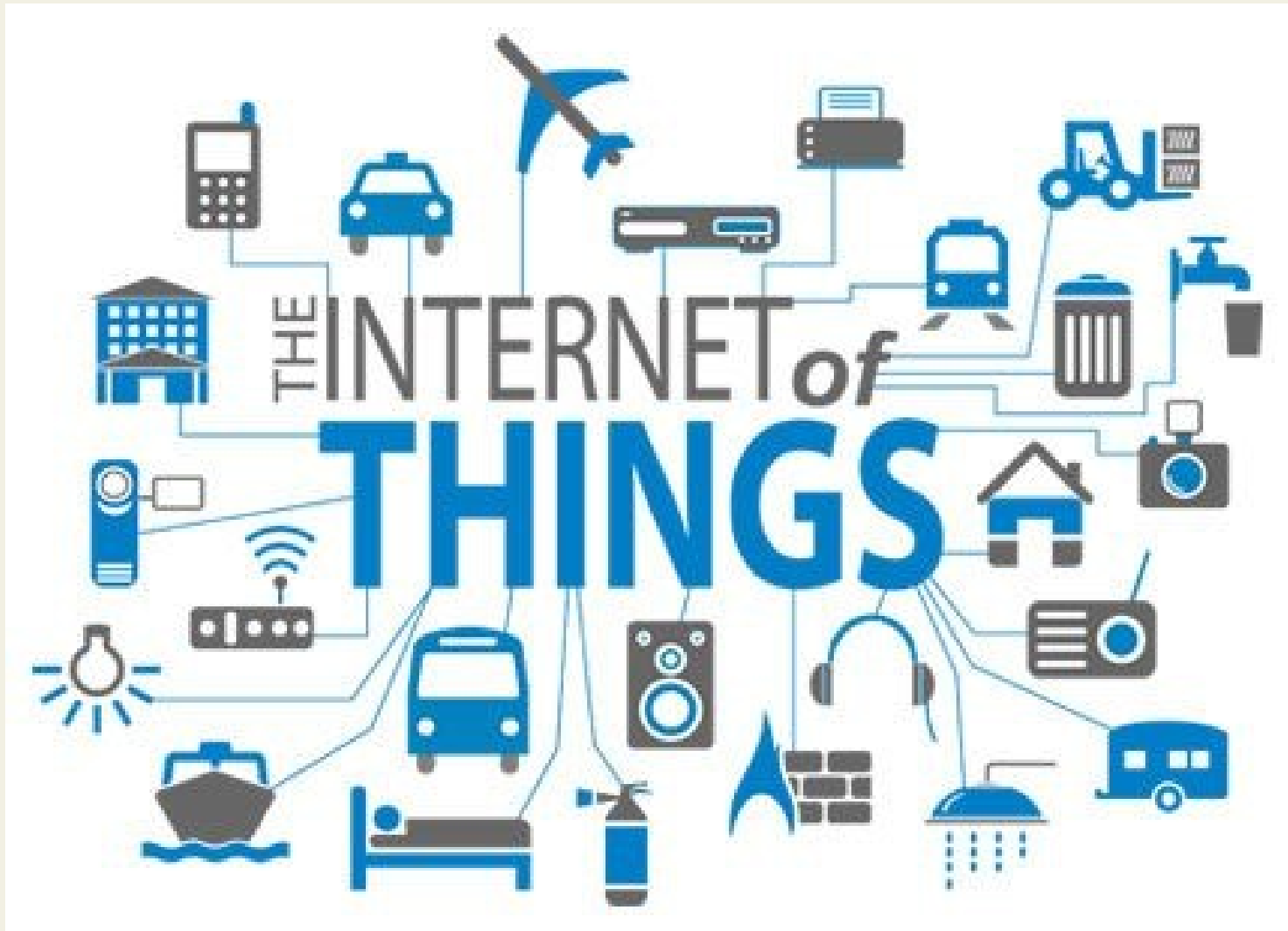


[Googlepedia: The Ultimate Google Resource \(3rd Edition\)](#)



AI in learning

LEVEL	1	Tech
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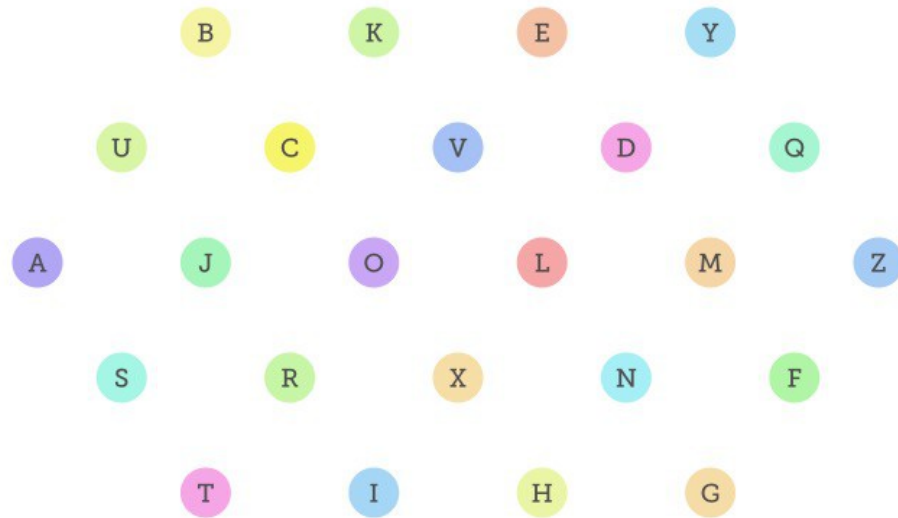


EDUCATE
EVERYONE
UNIQUELY

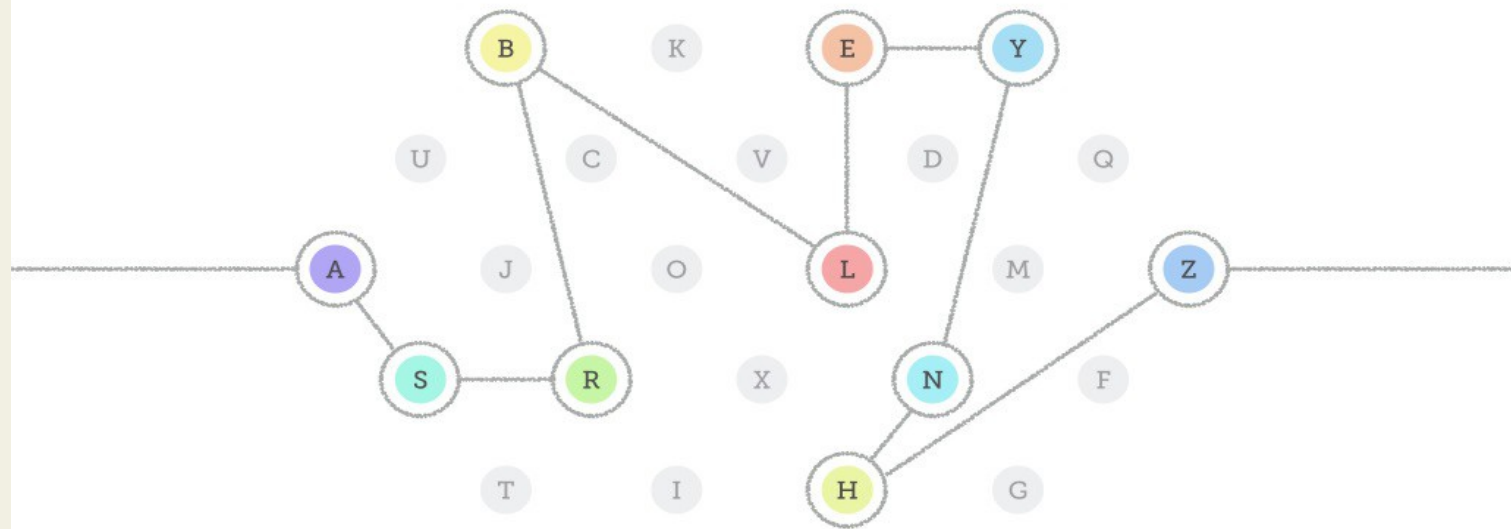
COGBOOKS.COM



Adaptive sets you free from the A to Z



Adaptive sets you free from the A to Z



It understands you – and finds the best way through





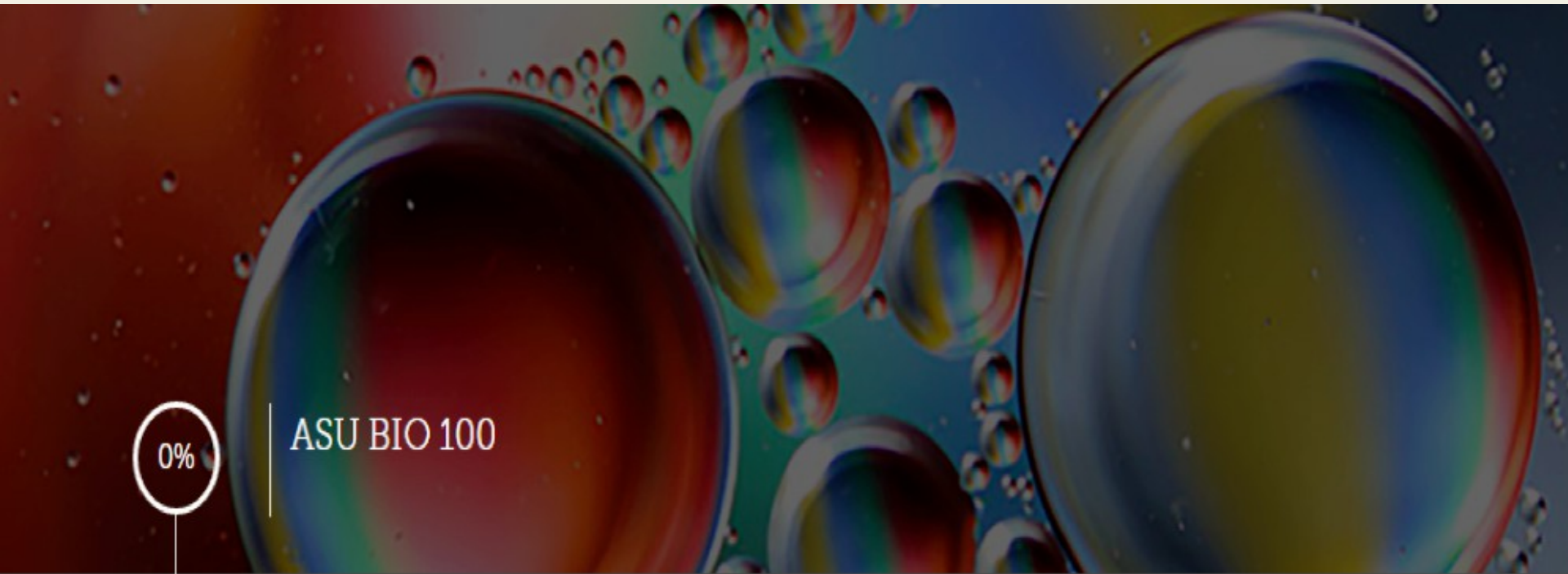
Biology BIO100

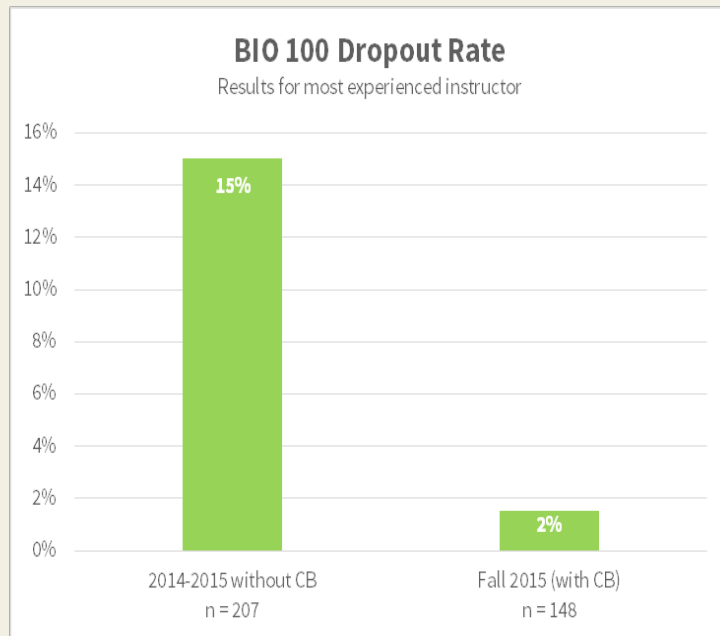
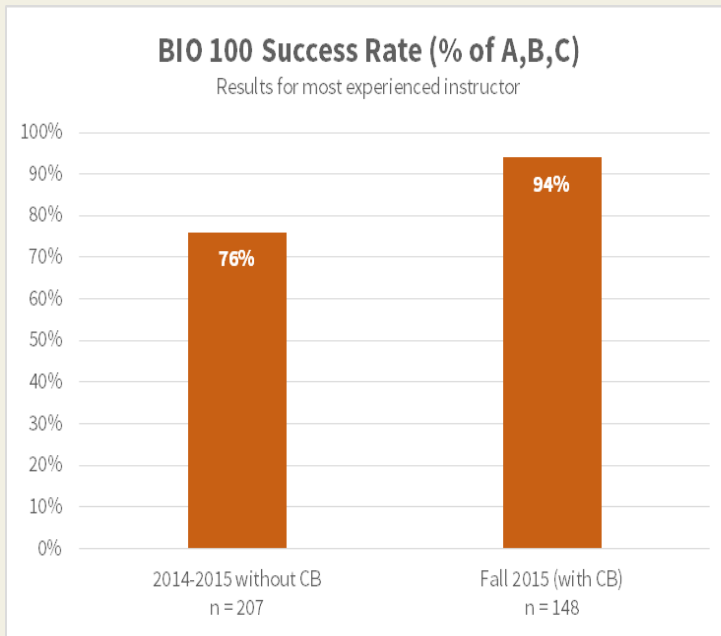
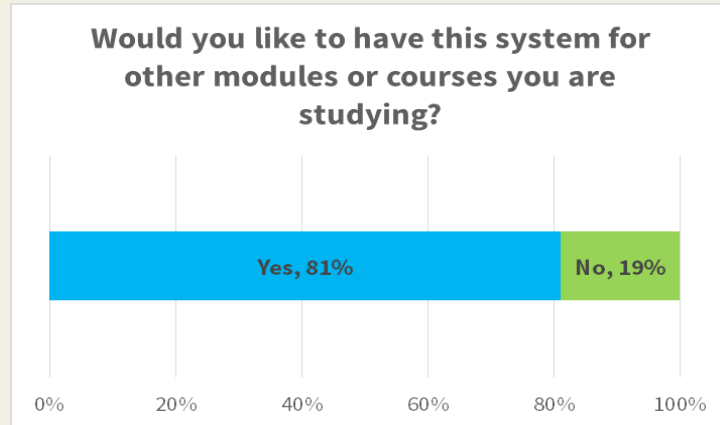
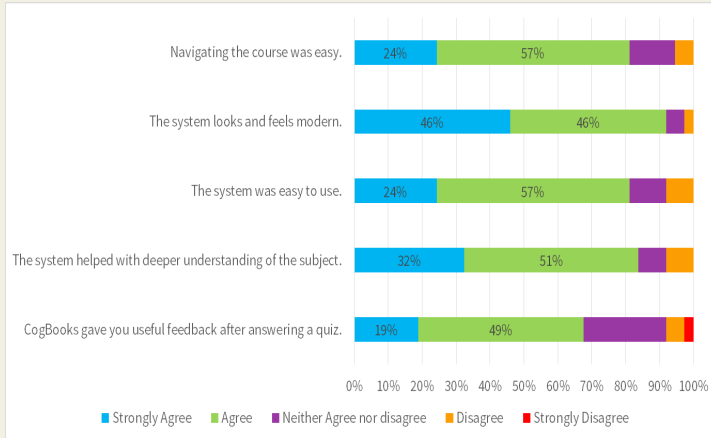
Susan Holechek (most experienced instructor)

72% in Spring to over 92% in Fall

Goal: over 90% (Met for first time)

"I think we had the perfect combination of a good system and good teacher"





10 things algorithms do that teachers can't

1. **Ignore** gender, race, social background
2. **Free** from cognitive biases
3. **Never** get tired, ill, irritable, disillusioned
4. **Do** things that brains **cannot**
5. **Personalize** learning
6. **Personal** reporting
7. **Prevent** failure & drop-out
8. **Automatically** improves courses
9. **Scale**
10. **Enterprise wide solutions**



AI in learning

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social



game

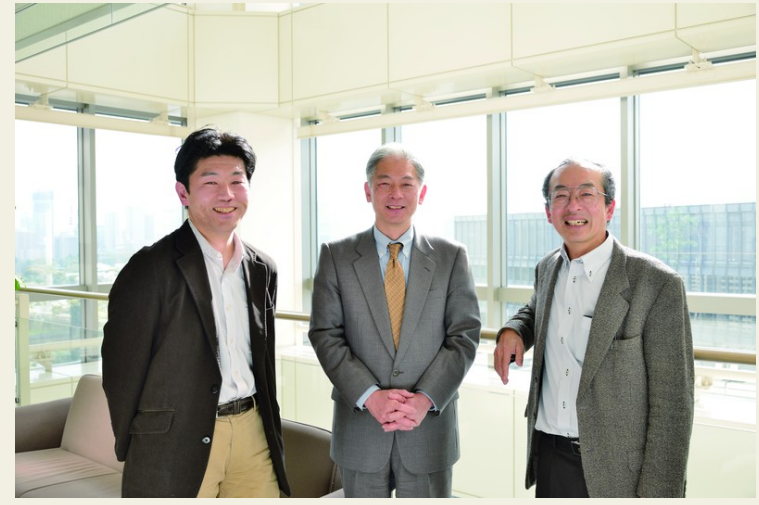


mobile

Todai Robot Project (Noriko Arai)



- Passed entrance exam: Tokyo Univ.
- Maths, Physics English & History
- 53.8% v human 43.8%



Why important?

Can AI replace graduate-level jobs?



AI ECONOMICS



Oxford: 47% of jobs to be automated

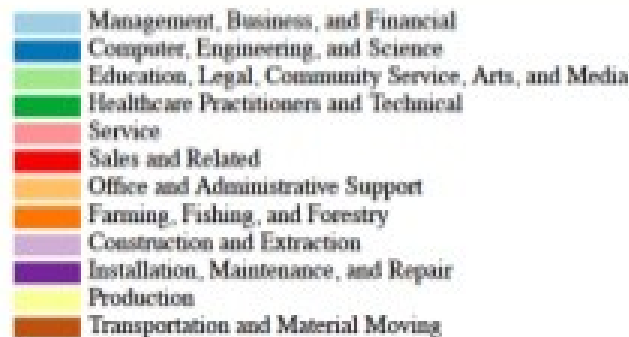
“in a decade or two”

702 occupations

At risk: telemarketers,
accountants, real estate,
retail sales, loan officer

1. Perception and Manipulation
2. Creative Intelligence
3. Social Intelligence

Universal Basic Income?



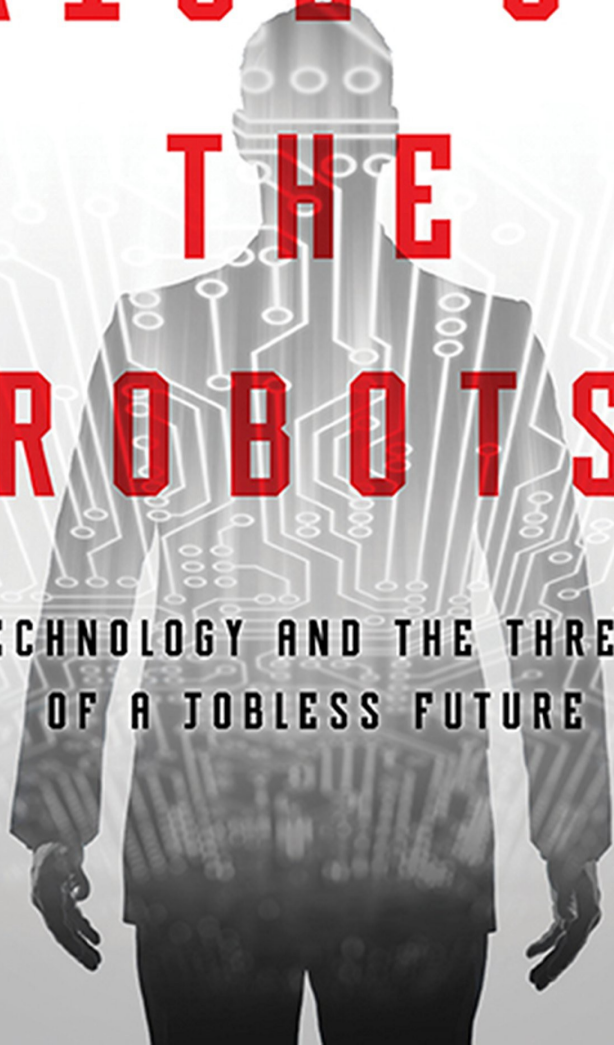
Frey and Osborne, 2013, "The Future of Employment: How susceptible are jobs to computerization?"

http://www.oxfordmartin.ox.ac.uk/downloads/academic/The_Future_of_Employment.pdf

MARTIN FORD

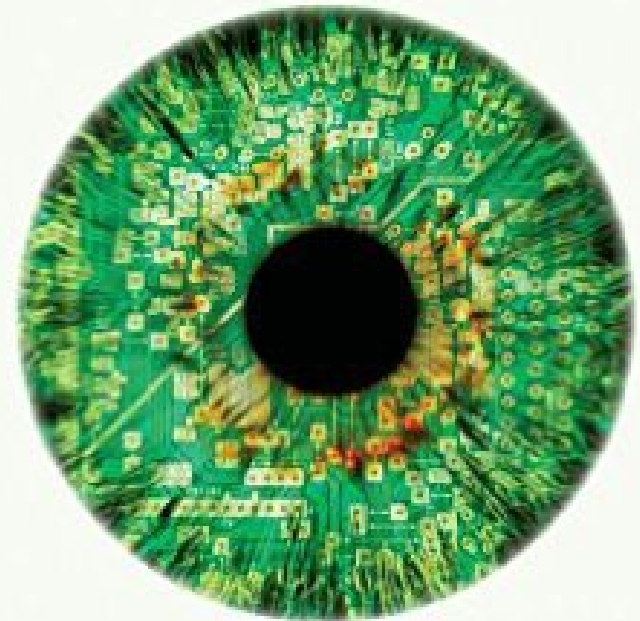
RISE OF THE ROBOTS

TECHNOLOGY AND THE THREAT
OF A JOBLESS FUTURE



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RICHARD DANIEL
SUSSKIND SUSSKIND



THE FUTURE OF THE PROFESSIONS

HOW TECHNOLOGY WILL TRANSFORM
THE WORK OF HUMAN EXPERTS

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