

THE SECOND MACHINE AGE

WORK, PROGRESS, AND PROSPERITY IN THE TIME OF

BRILLIANT TECHNOLOGIES

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The Second Machine Age

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The Second Machine Age

Changing the world requires two things:

- Physical Power: move or transform things
- Mental Power, decide where and how

Industrial Revolution = Physical Power

- Steam engine (and Internal combustion engine, Electricity)
- Mostly a <u>complement</u> to humans

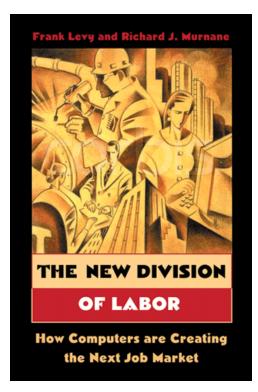
Second Machine Age = Mental Power

- Computers, Software, Big Data, Machine Intelligence
- Complement or substitute?





State of Understanding, 2004



Uniquely Human Abilities

- Autonomous mobility and fine motor control
- Language and complex communication
- Pattern matching and unstructured problem solving







Machine Intelligence

Interacting with physical world

- Fine and gross motor control
- Vision and other senses

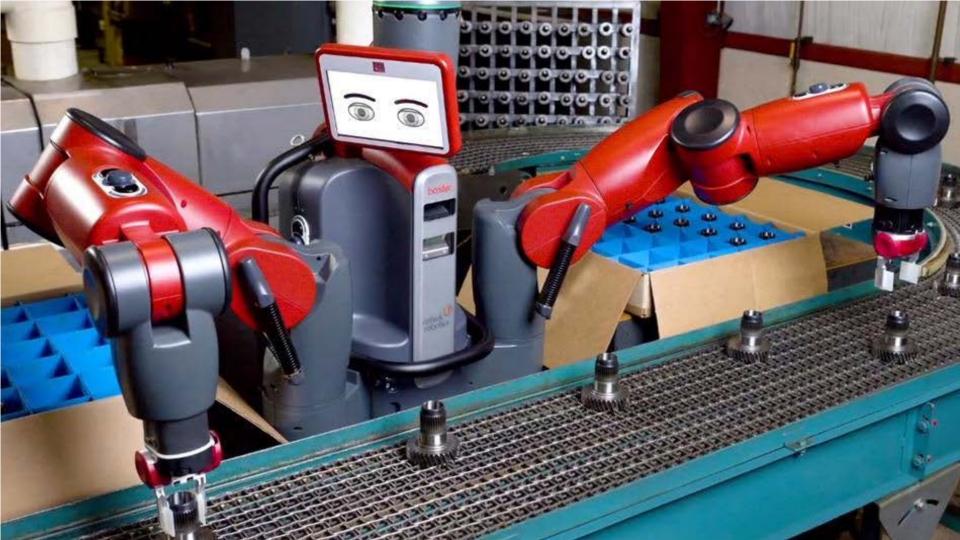
Language

- Voice recognition
- Natural language processing
- Creating narratives

Problem Solving

- Answering unstructured questions
- Rule based analysis
- Pattern recognition and classification
- > We're in the midst of the greatest "one-time" event in history!









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Siri

Voice recognition

LionbridgeTranslation

Narrative Science Authoring News Stories













Red Sox Defeat Cardinals 3-1, Lead World Series 3-2





Jon Lester went 7 2/3 innings yielding just four hits and Koji Uehara closed it out in the ninth as Boston got past St. Louis, 3-1. St. Louis had a batting average of just .138 and a wOBA of .166.

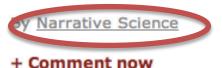
The Red Sox got on the board first in the top of the first when David Ortiz hit a double off starter Adam Wainwright, driving in Dustin Pedroia. With the game tied at 1-1 in the top of the seventh, the Red Sox went on top for good when David Ross hit a double off Wainwright, scoring Xander Bogaerts. Soon after, Jacoby Ellsbury hit a single, scoring Stephen Drew to make it 3-1 and force Wainwright from the game.

Lester got his fourth win of the postseason after he surrendered only one run on four hits with seven strikeouts and no walks. Uehara picked up his seventh save of the postseason after 1 1/3 innings of work striking out two and walking no one. Wainwright (2-3), who gave up three runs on eight hits with 10 strikeouts and one walk over seven innings, received the loss. Ortiz had a strong game for the Red Sox, going 3 for 4 with a double and an RBI. Ross also contributed, going 2 for 4 with a double and an RBI. Matt Holliday went 1 for 4 with a home run, a run, and an RBI in the loss.

The Red Sox take a one-game lead in the World Series and are just one win away from a World Series championship. The Red Sox will face the Cardinals Wednesday in Game 6 of the World Series at Fenway Park at 8:07 PM EDT.



Forbes Earnings Preview: Apple



Analysts have become increasingly bullish on **Apple** (**AAPL**) in the month leading up to the company's second quarter earnings announcement scheduled for Tuesday, April 24, 2012. The consensus earnings per share estimate has moved up from \$9.60 a share to the current expectation of earnings of \$9.86 a share.

f Share
49

What to Expect:



Machine Intelligence

Interacting with physical world

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- Vision and other senses

Language

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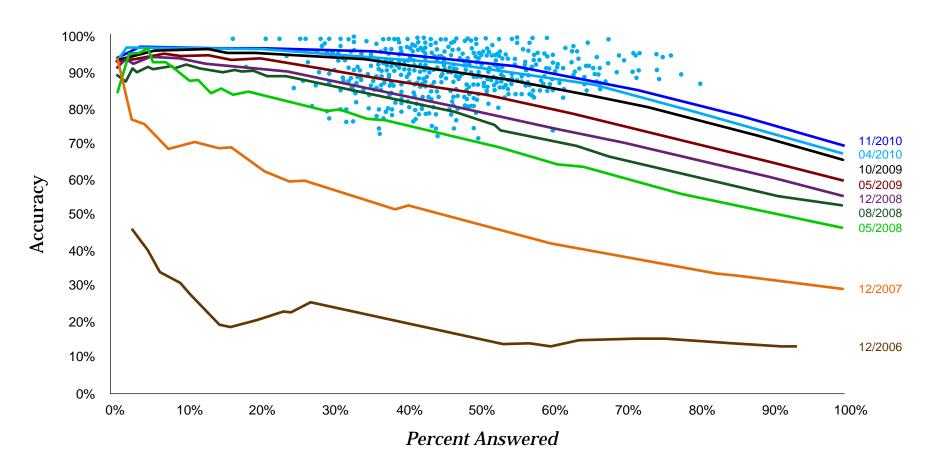
Problem Solving

- Answering unstructured questions
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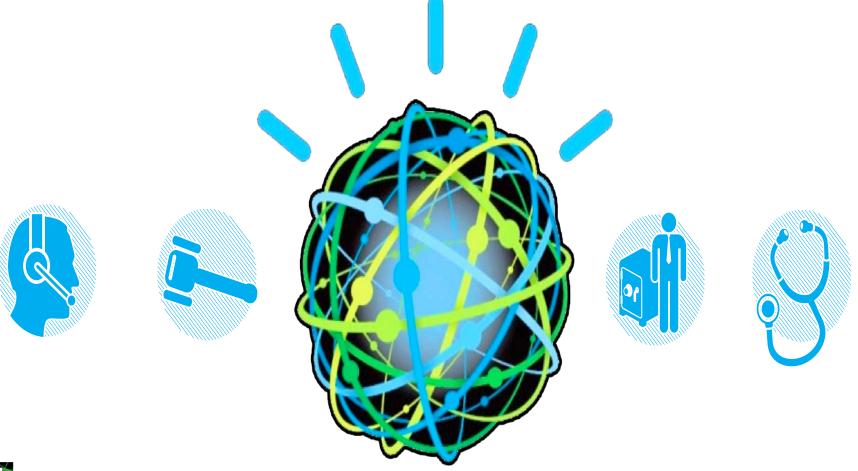
Accuracy and Questions Answered on Jeopardy!



The Digital Frontier









MARKET DATA

PERSONAL FINANCE

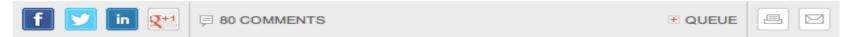
TECH

POLITICS

SUS

Machines Gauging Your Star Potential Automate HR Hiring

By Aki Ito - Oct 11, 2013 12:01 AM ET



They can drive cars, win Jeopardy and find your soon-to-be favorite song. Machines are also learning to decipher the most human qualities about you -- and help businesses predict your potential to be their next star employee.

A handful of technology companies from Knack.it Corp. to Evolv Inc. are doing just that, developing video games and online questionnaires that measure personality attributes in a job applicant. Based on patterns of how a company's best performers responded in these assessments, the software estimates a candidate's suitability to be everything from a warehouse worker to an investment bank analyst.

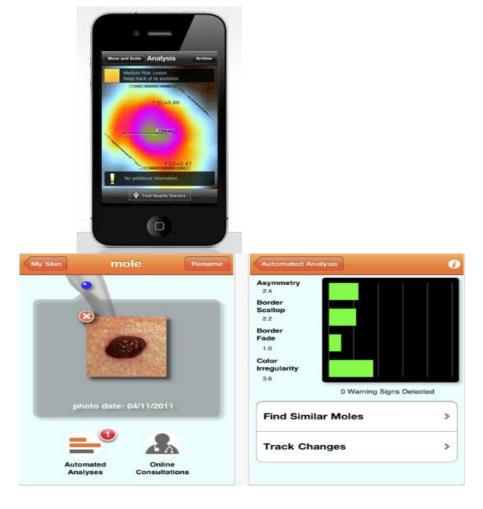


What does this mean for the economy?



The Bounty















facebook.







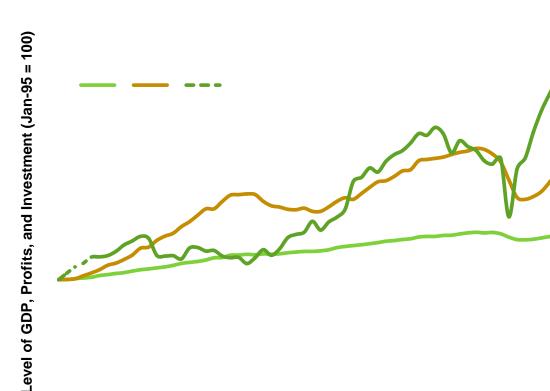


\$300 BILLION PER YEAR



GDP, Profits, Investment, and Employment

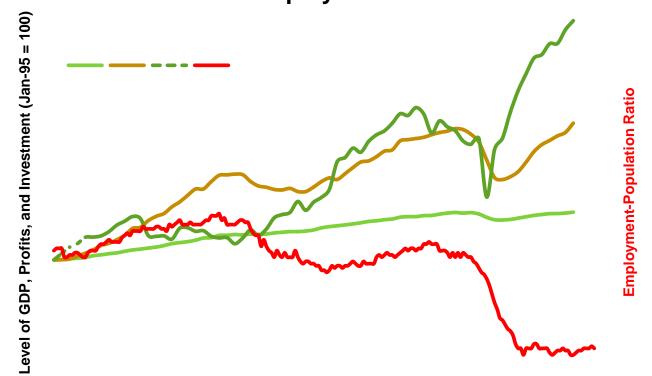
Trends in US GDP, Profits and Investment





GDP, Profits, Investment, and Employment

Trends in US GDP, Profits, Investment, and Employment

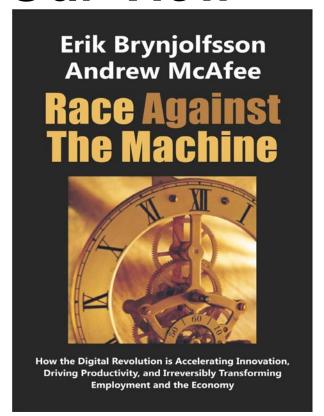




WHAT'S GOING ON?



Our View

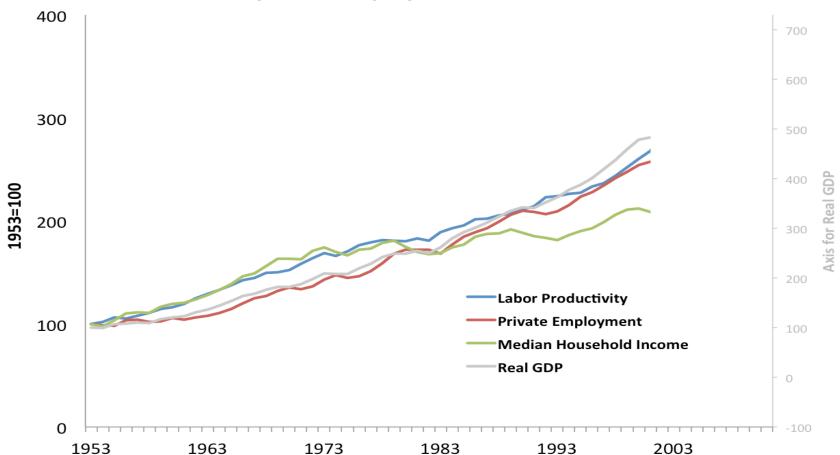


"Digital technologies change rapidly, but organizations and skills aren't keeping pace.

As a result, millions of people are being left behind."

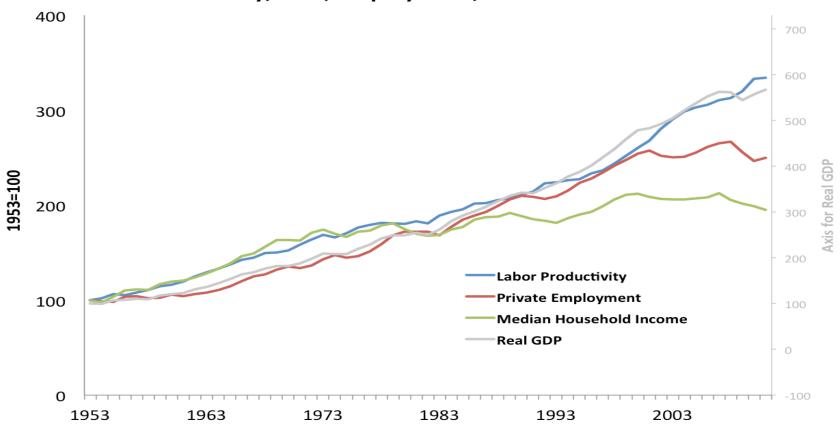


US Productivity, GDP, Employment, and Income: 1953-2001



The Great Decoupling

US Productivity, GDP, Employment, and Income: 1953-2011



The Hard Truth



Digital progress makes the economic pie bigger.

But there is no economic law that everyone, or even most people, will benefit.



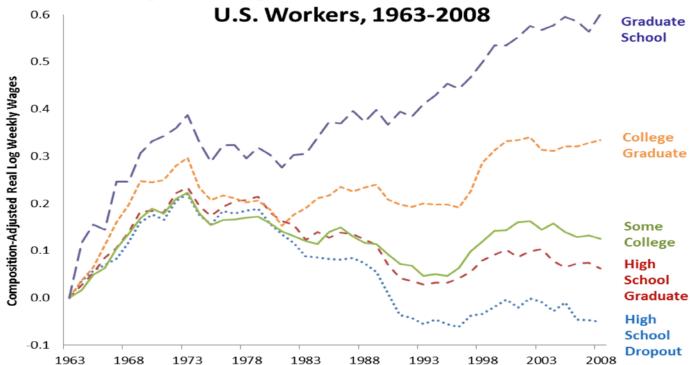
Three Sets of Winners and Losers

1. High Skilled vs. Low & Mid Skilled Workers



Skill Disparities

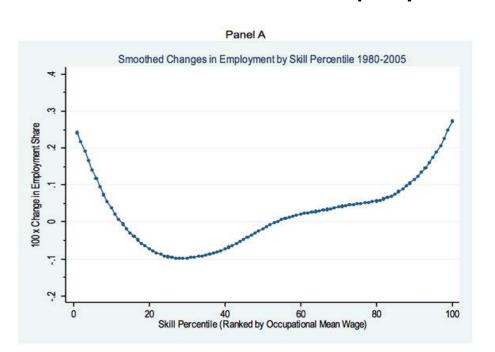


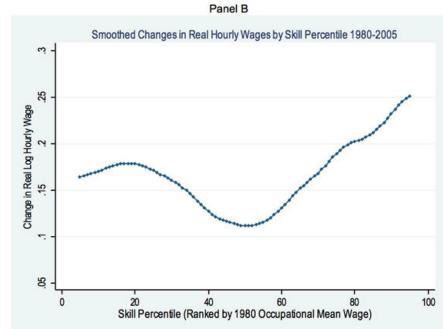




Polarization of the Labor Market

Mid-wage workers have been hit hardest in both employment and wages







Three Sets of Winners and Losers

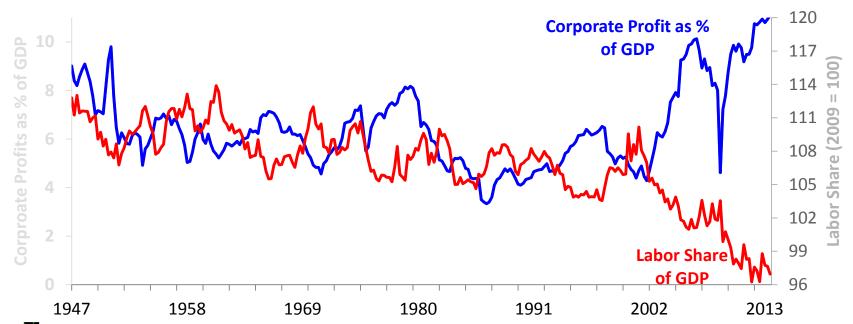
- 1. High Skilled vs. Low & Mid Skilled Workers
- 2. Capital vs. Labor





Capital vs. Labor

Corporate Profits After Tax as % of GDP & Non-Farm Labor Share, 1947-2013





Three Sets of Winners and Losers

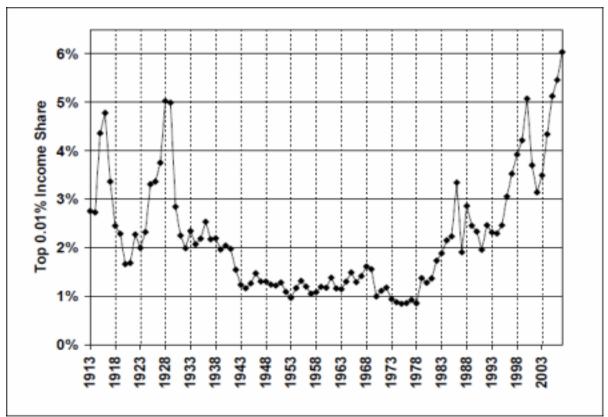
- 1. High Skilled vs. Low & Mid Skilled Workers
- 2. Capital vs. Labor
- 3. Superstars vs. Everyone Else







Superstars





WHAT IS TO BE DONE?



The New Grand Challenge

- Digital technologies will continue to accelerate.
- Our skills, organizations and institutions are lagging.
- Business as usual won't solve this problem.
- > We need to reinvent our economy and society to keep up with accelerating technology







The New Landscape

What challenges and opportunities do you see?

What are your concerns and questions?



The Initiative on the Digital Economy





Initiative on the Digital Economy

Exploring the Digital Revolution

The Initiative on the Digital Economy is a major effort addressing one of the most critical issues of our time: the impact of digital technology on business, the economy, and society. Launched by MIT Sloan in 2013, the Initiative includes faculty from across MIT.

ABOUT LEADERSHIP **EVENTS** RESEARCH SUPPORT

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"We need to invent new economic institutions. industries, business models, and ways of organizing work that will thrive in

PIONEERING RESEARCH

Analyzing Our Digital World

The Initiative on the Digital Economy (IDE) is a research effort focused on the impact of digital technology on businesses, the

UPCOMING EVENTS



Roundtable

A invitation-only event for IDE supporters.

To learn more, visit:

http://digital.mit.edu/erik

http://digital.mit.edu/ide

http://secondmachineage.com

