

Moving Forward with Digital Disruption: A Right Mindset

Bohyun Kim

CTO & Associate Professor, University of Rhode Island Libraries

[MentorNJ Networking Event 2018](#), Monroe Township, NJ.

October 5, 2018.

What We Will Cover Today

- I. Digital disruption
- II. Blurred lines between the physical, digital, biological spheres
- III. Transformations in production, management, and governance
- IV. Technology & Us
 - a) The Right mindset for navigating the era of digital disruption
 - b) The need for critical investigation of technology
 - c) The ideology of techno-chauvinism

I. Digital disruption

Digital Disruption

- **Digital disruption** is an effect that changes the fundamental expectations and behaviors in a culture, market, industry or process that is caused by, or expressed **through, digital capabilities, channels or assets.**

- “Digital Disruption,” Gartner, accessed September 15, 2018, <https://www.gartner.com/it-glossary/digital-disruption>.

An example?

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Register here for the GeekWire Summit

<https://www.geekwire.com/2016/amazon-go-works-technology-behind-online-retailers-groundbreaking-new-grocery-store/>



Outside Amazon's first "Amazon Go" retail store in Seattle. (GeekWire Photo / Nat Levy)

Amazon this morning **unveiled its first convenience store**, a high-tech retail location called "Amazon Go," currently in a private beta testing in Seattle and scheduled to



300+ networkers

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Amazon is considering opening as many as 3,000 cashierless stores by 2021, report says



- Amazon is considering opening 3,000 of its cashierless stores by 2021, Bloomberg reports.
- The e-commerce giant currently has three locations — known as Amazon Go — open in Seattle, where Amazon is headquartered, and on Monday opened a location in Chicago.
- Shares of retailers including CVS, Walgreens, Walmart, Target and Kroger moved sharply lower Wednesday afternoon following the news.

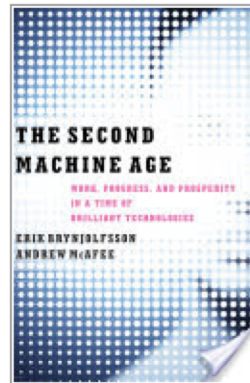
Lauren Thomas | [@laurenthomasx3](#)

Published 3:18 PM ET Wed, 19 Sept 2018 | Updated 5:16 AM ET Thu, 20 Sept 2018

'Second Machine Age'

- The "First Machine Age": Automation of physical labor that complements humans.
- The Second Machine Age": **Automation of cognitive tasks**, which substitutes humans.

The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies



Erik Brynjolfsson, Andrew McAfee

W. W. Norton & Company, Jan 20, 2014 - [Business & Economics](#)

- 304 pages

★★★★★

[12 Reviews](#)



A New York Times Bestseller. A "fascinating" (Thomas L. Friedman, New York Times) look at how digital technology is transforming our work and our lives.

The Fourth Industrial Revolution: what it means, how to respond



The 4th Industrial Revolution

- The First Industrial Revolution used water and steam power to mechanize production.
- The Second used electric power to create mass production.
- The Third used electronics and information technology to automate production.
- Now the Fourth Industrial Revolution is building on the Third, the digital revolution ... is characterized by **a fusion of technologies that is blurring the lines between the physical, digital, and biological spheres.**
- Klaus Schwab, "The Fourth Industrial Revolution: What It Means and How to Respond," World Economic Forum, January 14, 2016, <https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/>.

“The digital revolution ... is characterized by a fusion of technologies that is blurring the lines between the physical, digital, and biological spheres.”

II. Blurred lines between the physical, digital, and biological spheres



Secure | <https://www.tiltbrush.com/air/artists/peter-chan/>



Apps

Fix permissions on...

Create a new fiddle...

AI

URI

ML

GC

LITA

Syllabi

PhpFiddle Lite

Python Cloud IDE |...

» Other Bookm



Tilt Brush Artist in Residence

ABOUT

ARTISTS

Peter Chan

VIEW BIO

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https://www.flickr.com/photos/albert_hsieh/28236326333



Google Glass 2.0 is here, and it's found a home in an unexpected place: Factories. 🏭 COURTESY OF AGCO

STEVEN LEVY BACKCHANNEL 07.18.17 07:00 AM

GOOGLE GLASS 2.0 IS A STARTLING SECOND ACT

<https://www.wired.com/story/google-glass-2-is-here/>

Mixed-Reality Tech Brings Mars to Earth

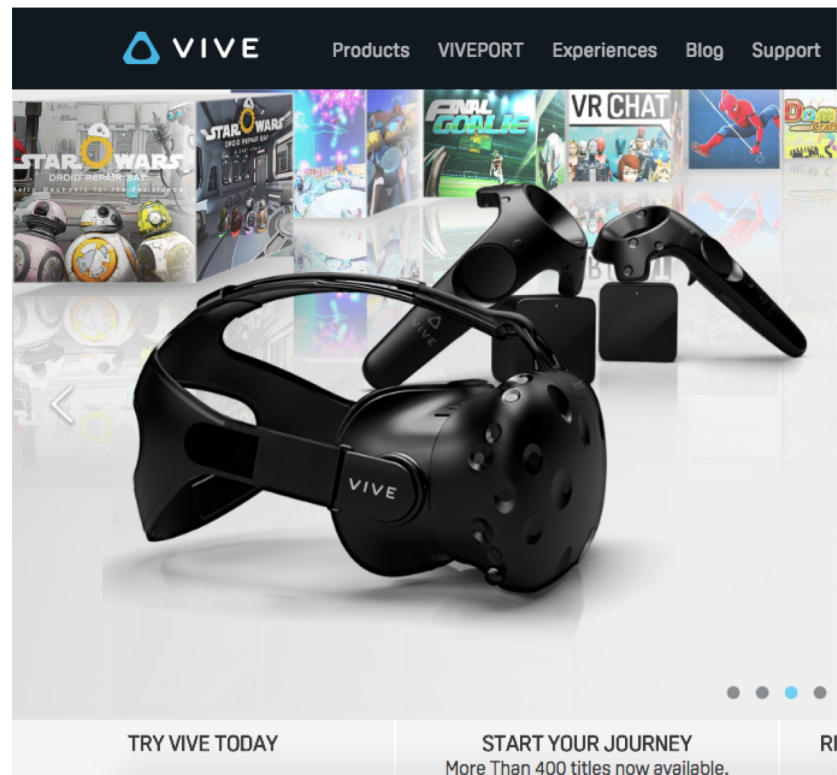


NASA and Microsoft have teamed up to create "Destination: Mars," a guided tour of Mars using the same Hololens technology that helps scientists plan the Curiosity rover's activities.

<https://www.nasa.gov/feature/jpl/mixed-reality-technology-brings-mars-to-earth>

Devices for VR

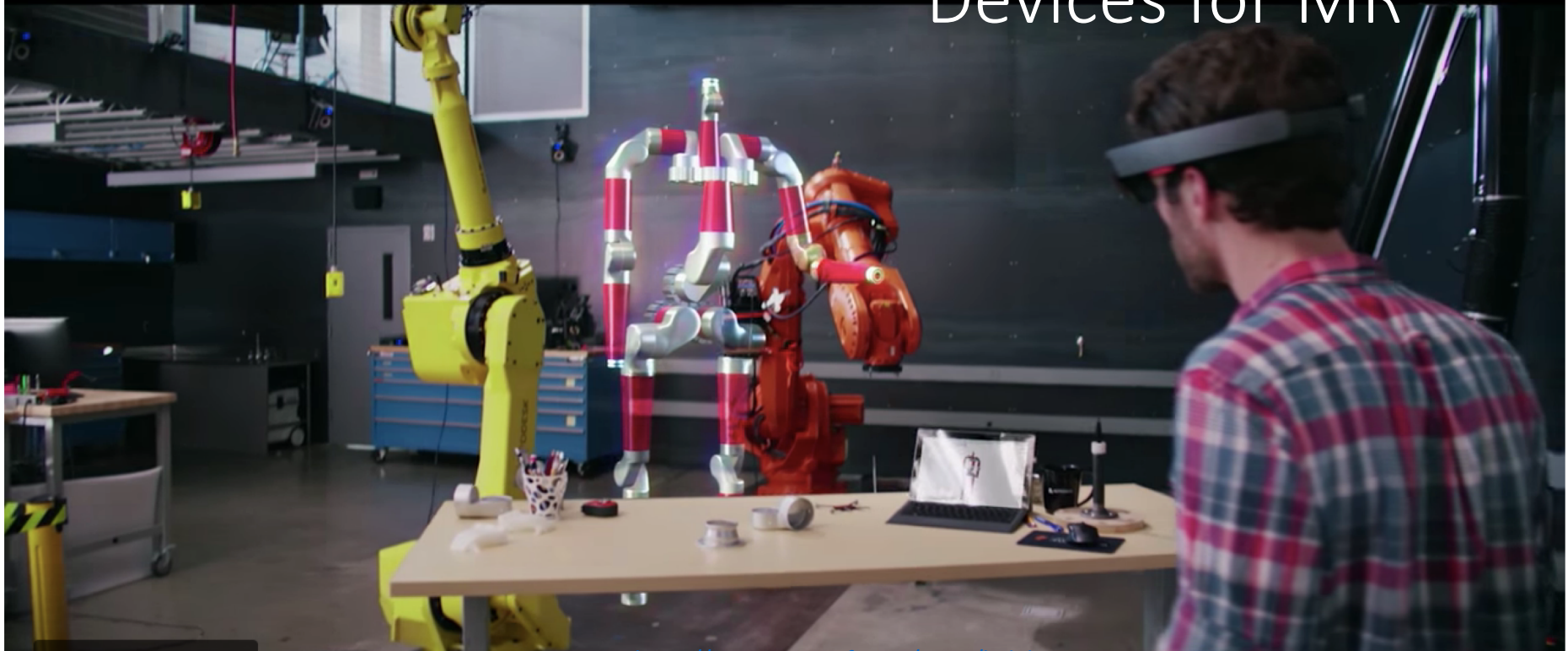
- HTC Vive
- Oculus Rift
- Google Cardboard
- Samsung Gear VR



Microsoft HoloLens: Mixed Reality Blends Holograms with the Real World



Devices for MR



MORE VIDEOS

<https://www.microsoft.com/en-us/hololens>

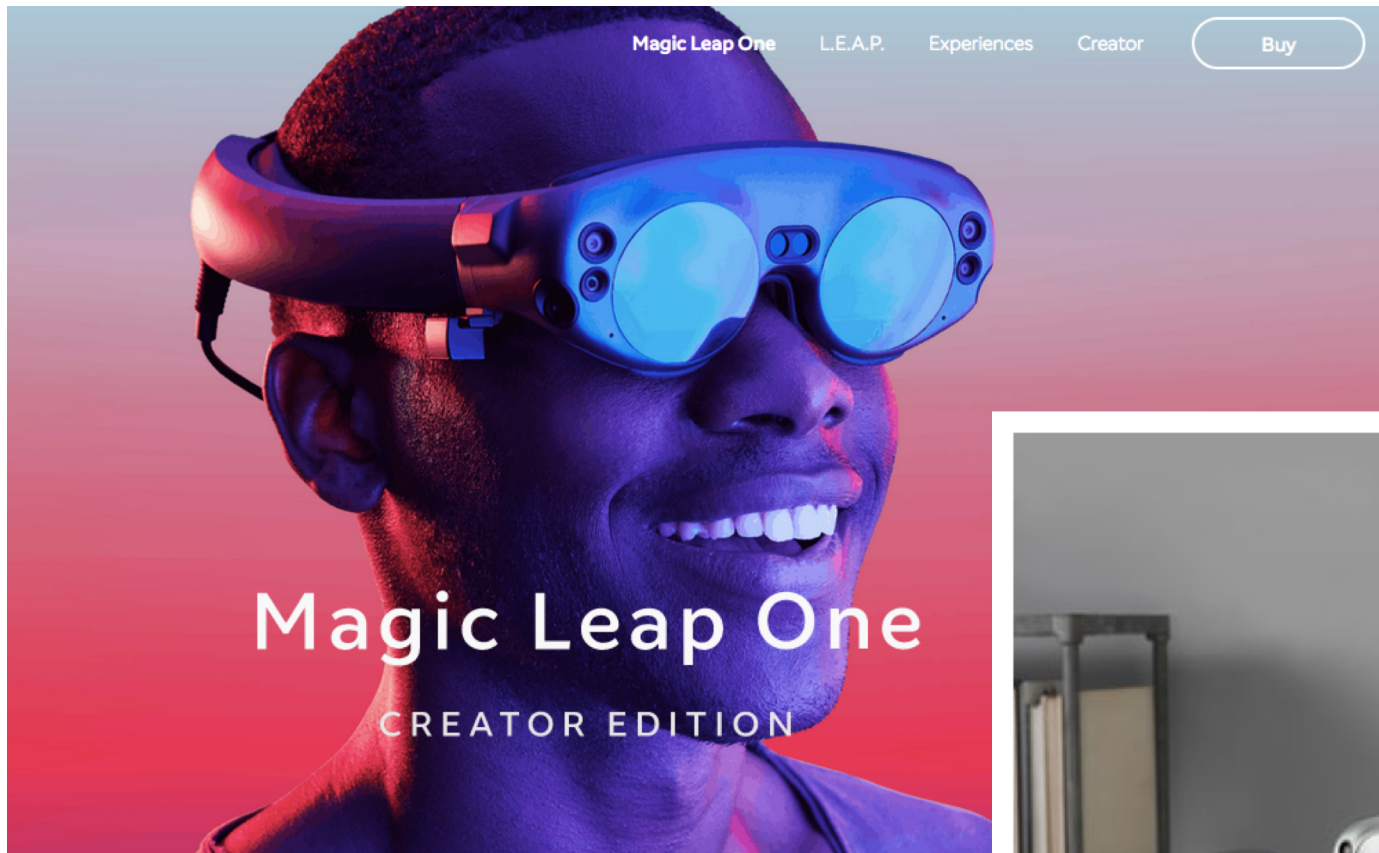


1:01 / 1:24



YouTube





<https://www.magicleap.com/magic-leap-one>

🏆 Winner "Best Innovation" - Tom's Guide CES 2018 Awards 🏆

Meta

Features

Workspace

Specs

Praise

FAQs

Place Your Order

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Be at the Forefront of the AR Enterprise Revolution

Fortune 500 brands have been using the Meta
2 to **create efficiencies** and **maximize
productivity** across their business.

Order Now



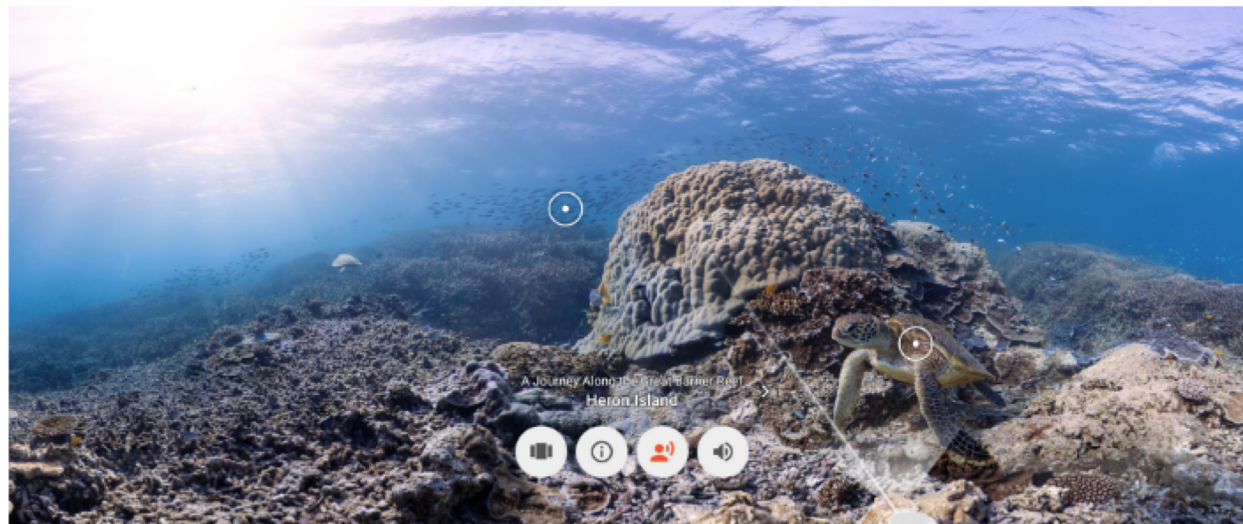
<https://buy.metavision.com/>

XR: Use Cases

- Education
- Healthcare
- Manufacturing
- Aviation
- Engineering

GOOGLE AR AND VR

Adventures abound: Explore Google Expeditions on your own



Jiabei Lei
Software Engineer

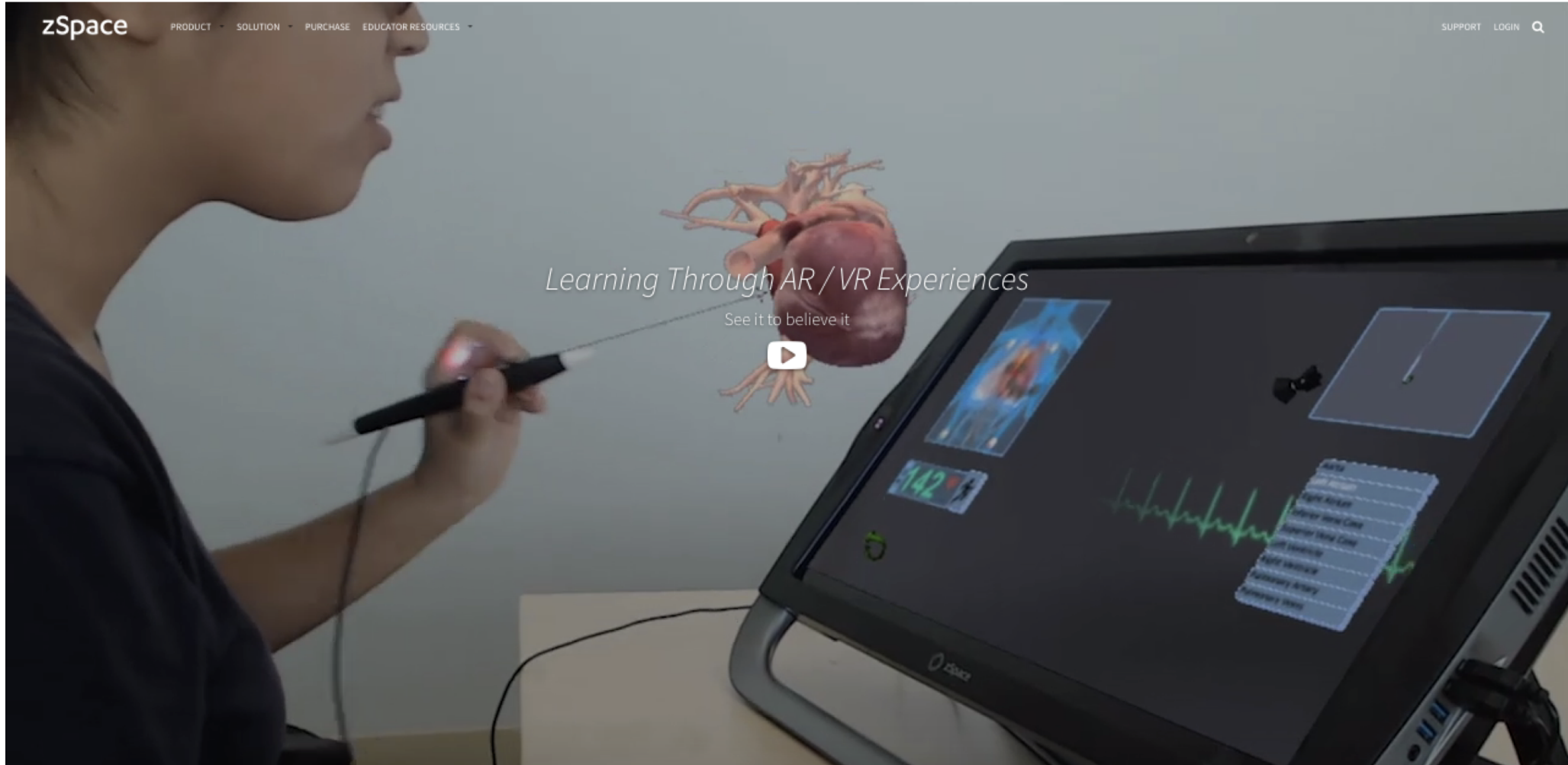
Published Jul 19, 2017

Google Expeditions makes it possible for teachers to take their classrooms on virtual reality field trips to amazing places like the Taj Mahal or Machu Picchu. Today, we're starting to roll out a new solo mode of Expeditions for Android, so that anybody can explore more than 600 different tours on their own. Just download the [Expeditions app](#)

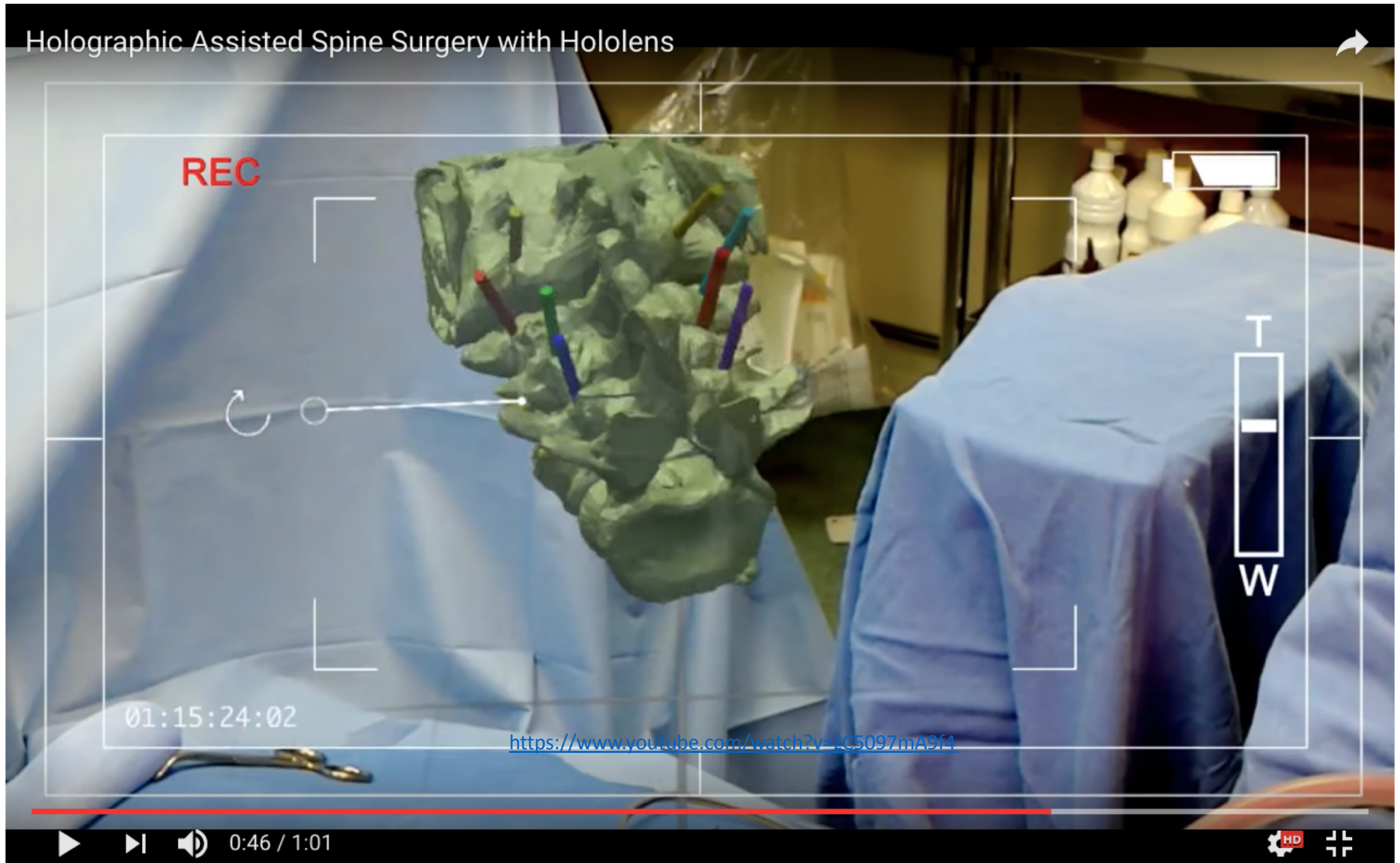
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Learning Through AR / VR Experiences

See it to believe it



Holographic Assisted Spine Surgery with Hololens





3:56

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Google Glass Didn't Disappear. You Can Find It On The Factory Floor

March 18, 2017 · 8:12 AM ET

Heard on [Weekend Edition Saturday](#)


TASNIM SHAMMA

FROM



<https://www.npr.org/sections/alltechconsidered/2017/03/18/514299682/google-glass-didnt-disappear-you-can-find-it-on-the-factory-floor>

BMW opts to incorporate HTC Vive VR headsets and mixed reality into the development of new vehicle models. Computer images instead of laboriously constructed draft models: greater flexibility, faster results and lower costs.

07.04.2016 Press Release ARCHIVE 

Munich. BMW has become the first car manufacturer to introduce a mixed reality system into vehicle development that has been devised entirely using components from the computer games industry. This offers some significant advantages over the VR systems that have existed to date, and is the first step towards making virtual reality a very real part of many developer workstations in the not-too-distant future.

Technology



<https://www.press.bmwgroup.com/global/article/detail/T0258902EN/bmw-opts-to-incorporate-htc-vive-vr-headsets-and-mixed-reality-into-the-development-of-new-vehicle-models-computer-images-instead-of-laboriously-constructed-draft-models:-greater-flexibility->

XR is the future



<https://medium.com/@northof41/what-really-is-the-difference-between-ar-mr-vr-xr-35bed1da1a4e>

Edit, copy, paste: CRISPR/Cas-9

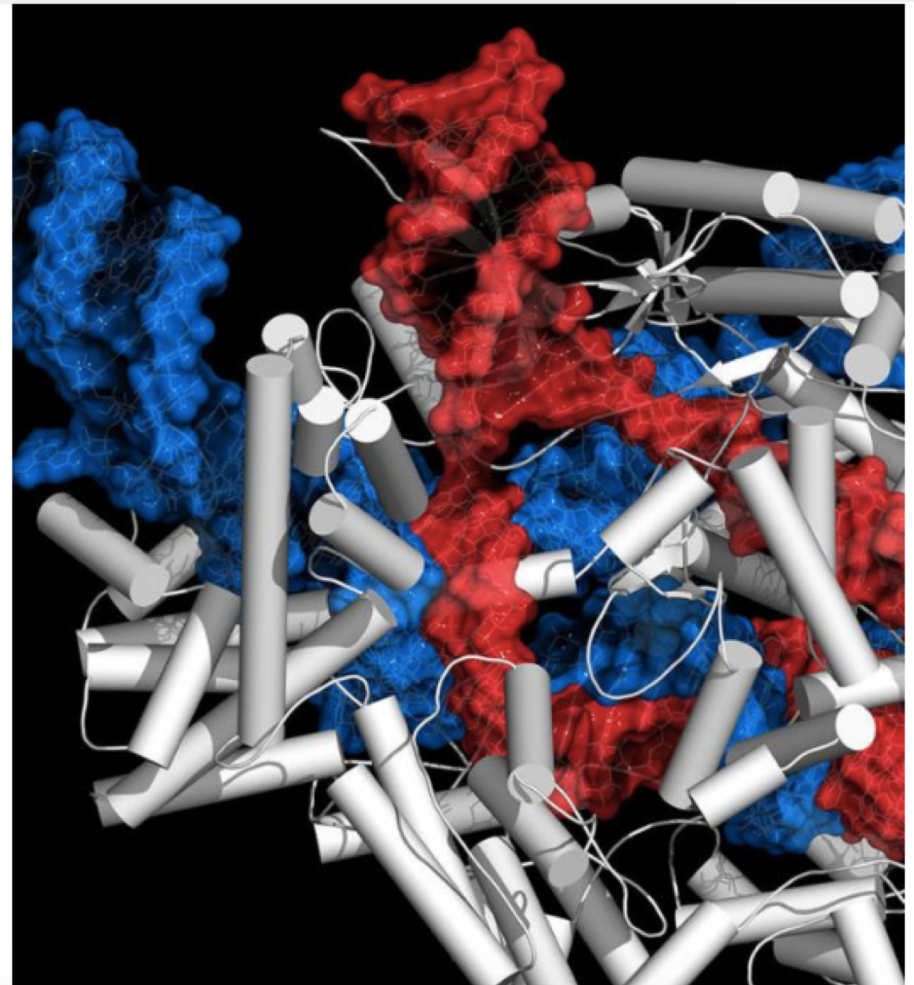
Even as more-established forms of gene therapy made progress in the clinic in 2017, excitement about the new-fangled gene-editing system grew substantially. Scientists reported using CRISPR to amend single genetic “letters” without actually cutting any DNA—a trick that should reduce the risks of any unintended damage to the cells being edited. Controversially, studies on edited human-embryo genomes were published (though one of them has been challenged). So-called biohackers claimed to be using the technique on themselves, but provided no evidence of any effects. Behind the scenes, long-running tussles over intellectual property continued—there’s much more than just Nobel prizes at stake. In 2018 repairs to specific genetic flaws, such as the one behind sickle-cell disease, may well enter clinical trials, as may techniques for using CRISPR/Cas-9 to weaken cancers. However, the even more controversial possibility of controlling the spread of diseases or invasive species by tinkering with wild animals’ genes remains distant.

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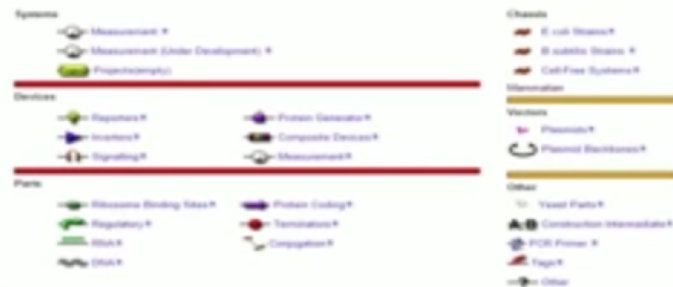
<https://espresso.economist.com/4317fd49a21384c85f6b405cba038e21>

Dec 29th 2017

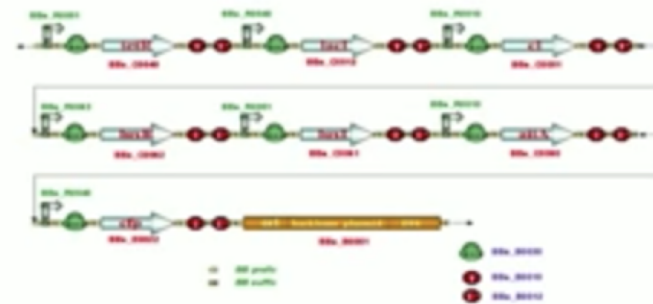


<https://www.youtube.com/watch?v=pnHD8gvccpl&feature=youtu.be>

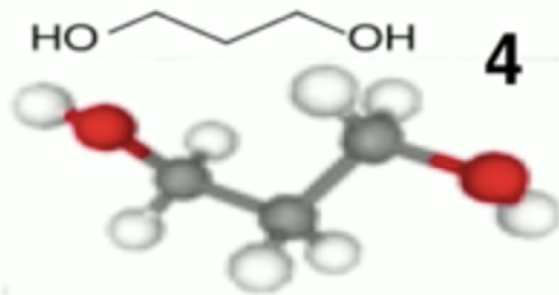
Synthetic Biology



>



2



4

To make high value products
(biofuels, chemicals, pharmaceuticals)

<



3

to program cells to become cellular
factories, sensors...

The 4th Industrial Revolution

- The speed of current breakthroughs
- Disruption brought to almost every industry in every country, whose breadth and depth heralds the transformation of entire systems of **production, management, and governance.**

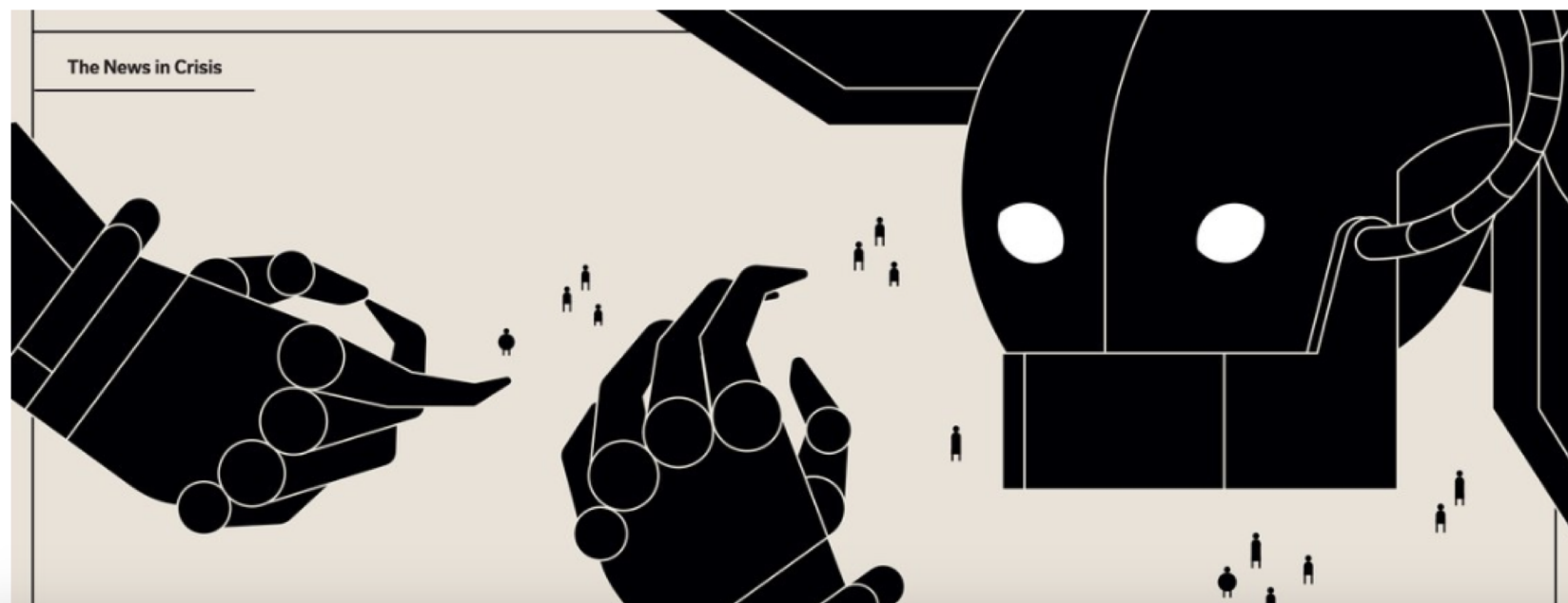
- Klaus Schwab, "The Fourth Industrial Revolution: What It Means and How to Respond," World Economic Forum, January 14, 2016, <https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/>.

III. Transformations in production, management, and governance

JOE KEOHANE BUSINESS 02.16.17 07:00 AM

Production

WHAT NEWS-WRITING BOTS MEAN FOR THE FUTURE OF JOURNALISM



<https://www.wired.com/2017/02/robots-wrote-this-story/>

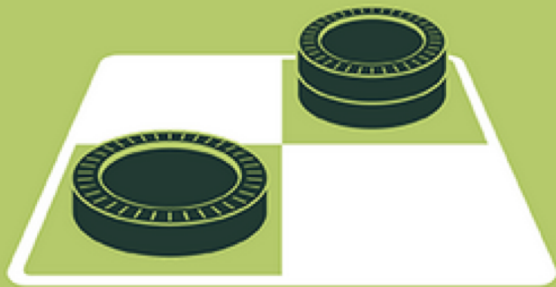
A graphic featuring the letters 'AI' in a bold, blue, sans-serif font. The letters are centered and appear to be emerging from a bright, orange-yellow light source. Radiating from this source are numerous thin, blue lines that spread outwards, creating a starburst effect. The background is a dark blue field filled with a pattern of white binary digits (0s and 1s). In the center, behind the 'AI' text, there is a cloud-like structure composed of many small, bright blue and white particles, giving it a nebula or data cloud appearance.

AI

What is Artificial Intelligence?

ARTIFICIAL INTELLIGENCE

Early artificial intelligence stirs excitement.



MACHINE LEARNING

Machine learning begins to flourish.



DEEP LEARNING

Deep learning breakthroughs drive AI boom.



1950's

1960's

1970's

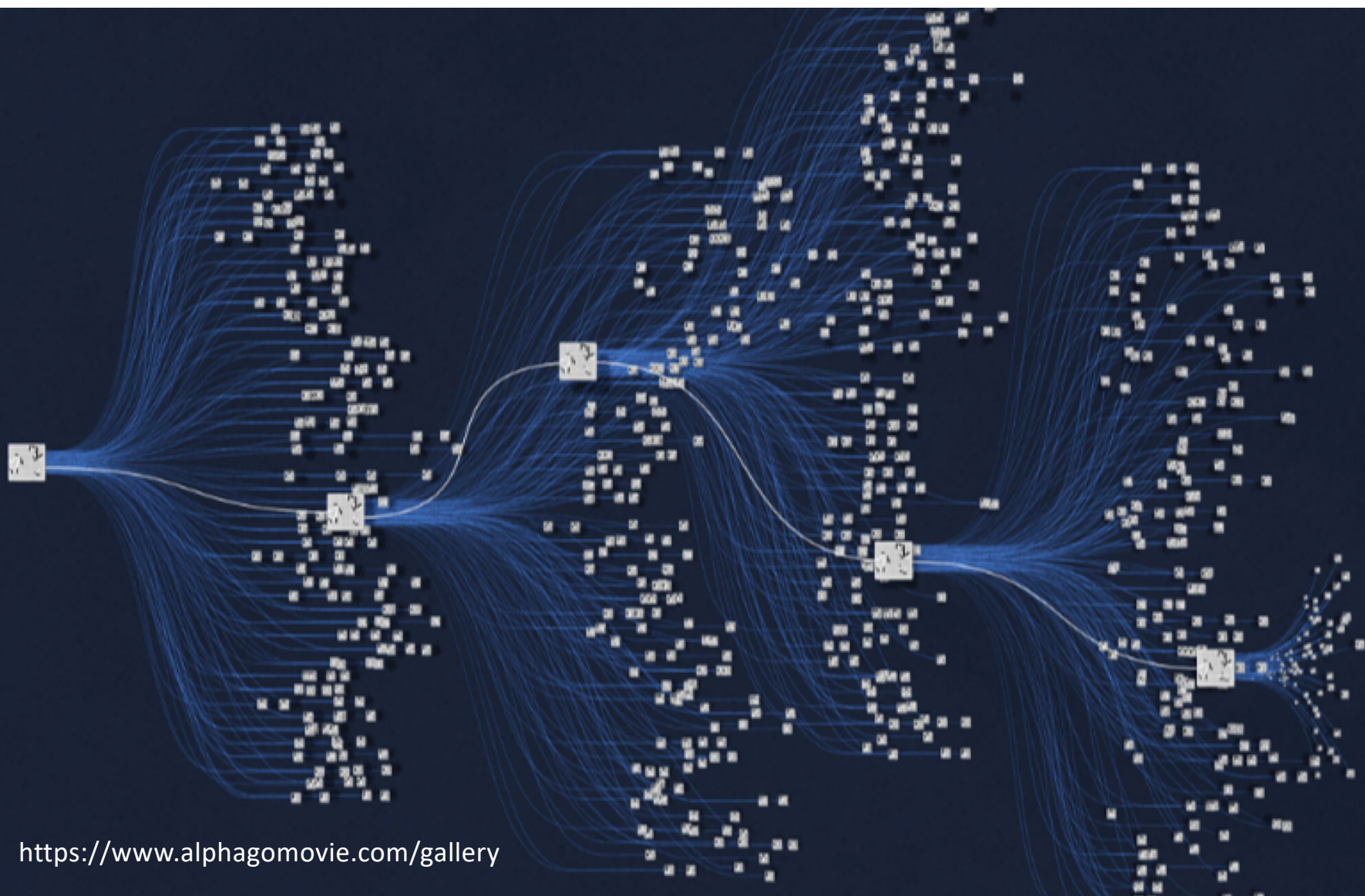
1980's

1990's

2000's

2010's





<https://www.alphagomovie.com/gallery>



AlphaGO Lee Se-dol
1202 CPUs, 176 GPUs, 1 Human Brain,
100+ Scientists. 1 Coffee.

<https://twitter.com/samim/status/707420890087202817>



Google

alphago

machine learning

digital media

Artificial Intelligence

After beating the world's elite Go players, Google's AlphaGo AI is retiring

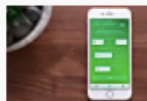
Posted May 27, 2017 by [Jon Russell \(@jonrussell\)](#)

<https://techcrunch.com/2017/05/27/googles-alphago-ai-is-retiring/>



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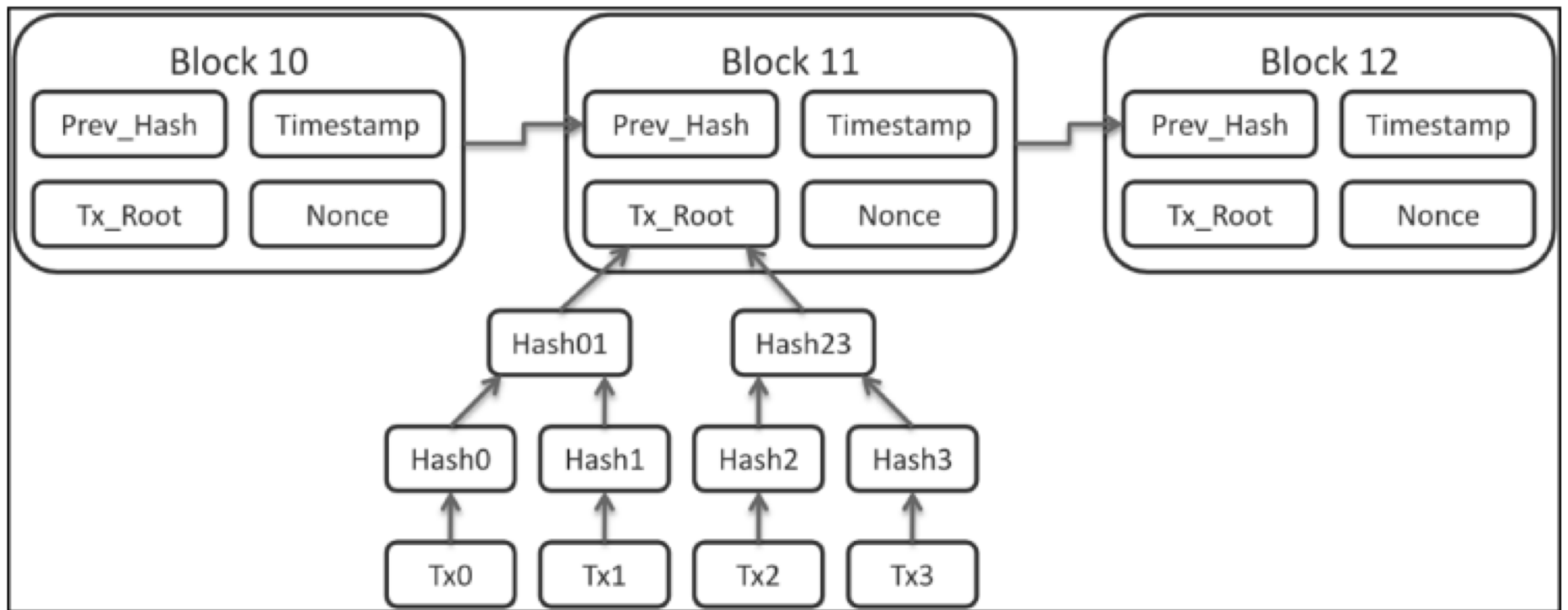
Crunchbase

Demis Hassabis

BIO

What is Blockchain?

<https://www.flickr.com/photos/quoteinspector/43567555845>



Ameer Rosic, "What Is Hashing? Under The Hood Of Blockchain - Blockgeeks,"
Blockgeeks (blog), July 2017, <https://blockgeeks.com/guides/what-is-hashing/>.

Inside the Jordan refugee camp that runs on blockchain

Syrian refugees could regain legal identities that were lost when they fled their homes.

by Russ Juskalian April 12, 2018



A few times a month, Bassam pushes a shopping cart through the aisles of a grocery store stocked with bags of rice, a small selection of fresh vegetables, and other staples. Today he's wearing a black sweater tucked into denim jeans, which are themselves tucked into calf-high boots caked in mud. The Tazweed Supermarket, where he's shopping, is on the periphery of a 75,000-person refugee camp in the semi-arid Jordanian steppe, six and a half miles from the Syrian border.

At the checkout counter, a cashier tallies the total, but Bassam doesn't pay with cash or a credit card. Instead he lifts his head to a black box and gazes into the mirror and camera at its center. A moment later, an image of Bassam's eye flashes on the cashier's screen. Bassam collects his receipt—which reads “EyePay” and “World Food Programme Building Blocks” across the top—and walks out into the noonday chaos of the



<https://www.technologyreview.com/s/610806/inside-the-jordan-refugee-camp-that-runs-on-blockchain/>

Recommended for You

- 01 The first “social network” of brains lets three people transmit thoughts to each other's heads
- 02 How to know if you're affected by Facebook's massive data breach



Uber, Lyft Drivers Earning A Median Profit Of \$3.37 Per Hour, Study Says

March 2, 2018 · 6:25 AM ET

JAMES DOUBEK



Management



An Uber car waits for a client in Manhattan in June 2017. A study from MIT says most drivers are making less than minimum wage.

Spencer Platt/Getty Images

Uber

Associated Press

Mon 26 Mar 2018
22.33 EDT



Arizona suspends Uber's self-driving car testing after fatality

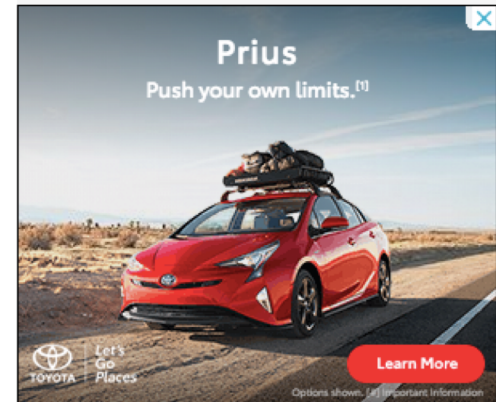
Governor Doug Ducey tells Uber crash raises concerns about its ability to safely test technology



▲ Transport safety investigators examine a self-driving Uber vehicle involved in a fatal accident in Tempe, Arizona. Photograph: Reuters

Arizona governor Doug Ducey suspended Uber's self-driving vehicle testing on Monday following **a pedestrian fatality in a Phoenix suburb last week.**

Advertisement



<https://www.theguardian.com/technology/2018/mar/27/arizona-suspends-ubers-self-driving-car-testing-after-fatality>

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2018

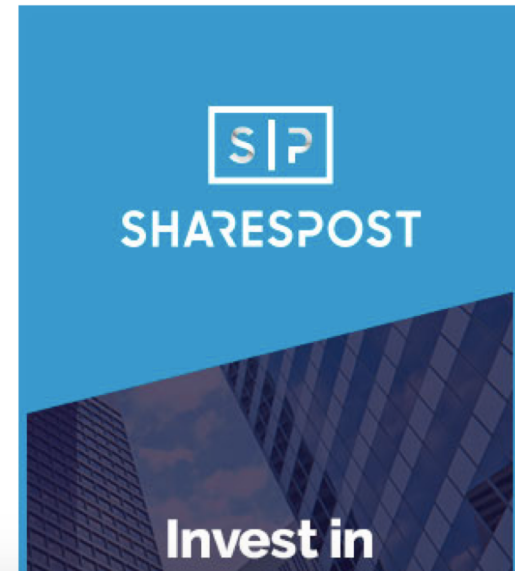
Login / Sign up

Sony wants to digitize education records using the blockchain



Jon Russell @jonrussell / Aug 9, 2017

 Comment



<https://techcrunch.com/2017/08/09/sony-education-blockchain/>



Secure

https://thenextweb.com/insider/2018/04/27/reno-aims-to-make-marriage-blockchain-official/?amp=1&__twitter_imp...



Reno aims to make marriage blockchain official

BRYAN CLARK — 14 HOURS AGO

Governance

<https://tnw.to/SI2Oo>





A video showing facial recognition software in use at the Megvii showroom in Beijing.

Gilles Sabrié for The New York Times

<https://www.nytimes.com/2018/07/08/business/china-surveillance-technology.html>

IV. Technology & Us

- **Optimistic** about the future that will be shaped by today's advancement of technology?
- **Concerned** about the future?
- **Pessimistic** about the future?

Questions

- Love **technology**?
- Concerned about technology?
- Against technology?

- Love **change**?
- Stressed about change?
- Hate change?

More Questions

- How are **you** doing/feeling in relation to the future that will be shaped by today's advancement of technology?
- How do you think **your unit** is doing/feeling?
- How do you think **your library** is doing/feeling?
- How do you think **librarianship** is doing/feeling?

Gaining New Skills, Moving Up, Innovating...

- Facing disruption, what kind of mindset would move forward our ability to stay up-to-date with emerging tech trends and to find ways to apply them productively to libraries?



(a) Right Mindset: Key Components

- Confidence
- Curiosity
- Open-mindedness
- Collaborating & Playing on your strengths
- Critical investigation of technology



AI Lab at URI

Interdisciplinary Learning on Artificial Intelligence

URI > Libraries > AI Lab at URI

<https://web.uri.edu/ai/>

AI Lab Equipment Courses Events People Press & Presentations Contact

AI Lab



← → ↻ 🔒 <https://web.uri.edu/ai/openingday/> 🔍 ☆

Presentations and Demonstrations

AI Lab (Room 147)

- Industrial Robotic Hand, *demonstration*
- Pedagogy of the AI Lab, *presentation*
- Parallel Computing and Little Fe, *presentation*
- Coding, Data, and the Open Science Framework, *presentation*
- Social Context of AI: The Big Questions, *discussion and activities*

Concept (Room 130)

- Drone Flight, *demonstration*

Makerspace (Room 165)

- Smart Robotized Prosthetics, *presentation*
- Virtual Tour Engineering, *demonstration*
- Kaya: Smart Textiles for Medicine, *demonstration*



URI Open Access Symposium

Co-sponsored by the URI Libraries, the Office of the Provost, the Office of the Vice President for Research and Economic Development, and the Faculty Senate

This event is especially geared towards URI faculty but is open to students, researchers, staff, and anyone with an interest in open access to scholarship. Come share experiences, feedback, questions, and challenges around publishing open access and participating in the [URI Open Access Policy](#) and [URI Open Access Fund](#). The event will include a panel discussion and opportunities for informal networking with colleagues. Time permitting, we will also view and discuss a clip from the important new film [Paywall: The Business of Scholarship](#). **Register [here](#).**

Featuring URI faculty speakers:

Donna Hughes

Professor, Gender and Women's Studies
Editor-in-Chief of the OA journal, [Dignity](#)

Hans Saint-Eloi Cadely

Assistant Professor, Human Development and Family Studies

 **Register**



I'm Interested



Invite Friends

PEOPLE INTERESTED

No activity yet

GETTING HERE

Technology is not a panacea.



CULTURE

Judge rules man had right to shoot down drone over his house

Technically Incorrect: A Kentucky judge dismisses all charges against William Merideth, saying the drone was an invasion of privacy.

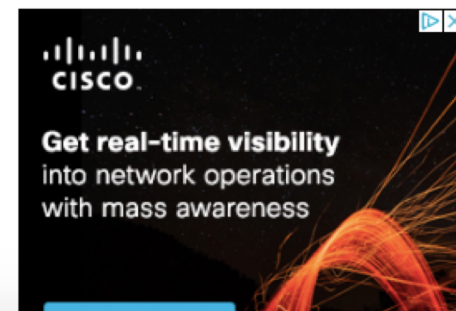
BY CHRIS MATYSZCZYK / OCTOBER 28, 2015 11:13 AM PDT



Technically Incorrect offers a slightly twisted take on the tech that's taken over our lives.

It was a case that gripped the nation. Or at least Kentucky.

Should it have temporarily



(b) Critical Investigation of Technology

From a conversation between The Verge and Uber's product head:

“We think carpooling is very much the way of the future,” Ethan Stock, director of product for shared rides at Uber, tells *The Verge*. “Not only for our service, but we think the transformation of car ownership towards carpooling is going to be tremendously beneficial for cities, for the environment, for all the reasons that we’re very familiar with — congestion, pollution, etc.”

<https://gizmodo.com/i-tried-uber-s-new-pool-express-service-and-honestly-j-1823190462>

Technology as a divider
and a discrimination-amplifier

- Makers vs. Takers
- Developers vs. Fixers/Maintainers
- Creators vs. Documentarians
- Hard skills vs. Soft skills
- Hal 9000 vs. Alexa



SCIENCE

One Wikipedia Page Is a Metaphor for the Nobel Prize's Record With Women

Donna Strickland is only the third woman in history to win the award in physics—and her research probably deserved attention a lot sooner.

MARINA KOREN OCT 2, 2018

<https://www.theatlantic.com/science/archive/2018/10/nobel-prize-physics-donna-strickland-gerard-mourou-arthur-ashkin/571909/>



The Nobel Prize winner Donna Strickland (PETER POWER / REUTERS)

MORE STORIES

When Will the Gender Gap in Science Disappear?

ED YONG



Women Are Invited to Give Fewer Talks Than Men at Top U.S. Universities

ED YONG



How a 130-Year-Old Technology Led to a Nobel Prize

MARINA KOREN



The Game-Changing Technique Behind an Amazing New



Misguided Techno-Utopianism

- Blind optimism about technology;
- Lack of caution about how new technologies will be used;
- Disregard for social convention for the sake of building new things;
- Efficient code is prioritized above human interactions;
- Worship of the cult of genius that camouflages a range of structural discrimination;
- Techno-libertarianism/Counterculture for radical individuality (Male bias + Genius myth);
- Inability to reconcile the demands of being individual with the demands of participating in society.

Meredith Broussard, *Artificial Unintelligence: How Computers Misunderstand the World* (Cambridge, Massachusetts: The MIT Press, 2018).

(c) The Ideology of 'Techno-chauvinism'

- “We have a small, elite group of men who tend to overestimate their mathematical abilities, who have systematically excluded women and people of color in favor of machines for centuries, who tend to want to make science fiction real, who have little regard for social convention, who don't believe that social norms or rules apply to them, who have unused piles of government money sitting around, and who have adopted the ideological rhetoric of far-right libertarian anarcho-capitalists.”

Meredith Broussard, *Artificial Unintelligence: How Computers Misunderstand the World* (Cambridge, Massachusetts: The MIT Press, 2018).

**That technology will always make things
better for everyone is simply not true.**

Critical investigation of technology

Gaining New Skills, Moving Up, Innovating...

- a) *What kind of mindset would move forward our ability to stay up-to-date with emerging tech trends and to find ways to apply them productively to libraries?*
- b) How do we cultivate such a mindset **in organizations** and **profession** as well as individuals?

Setting the Right Organizational Norm and Culture

- Cultivate curiosity
- Support experimentation
- Reward a try-out, not just success
- Encourage sharing & open communication
- **Mind our own biases**

Thank you!

- Bohyun Kim
- CTO/Associate Professor at the University of Rhode Island Libraries
- @bohyunkim - Twitter
- <http://www.bohyunkim.net/blog/presentations> - Talks/Presentations
- <https://www.slideshare.net/bohyunkim/> - Slideshare