# Artificial Intelligence, Machine Learning, Neural Nets

# ason Griffey

Øgriffey griffey@gmail.com

Strategies for the Future of Libraries

metaLAB @ Harvard

evenly distributed llc

Photo by <u>Kushagra Kevat</u> on <u>Unsplash</u>





### LibraryBox v2.1: Portable Private **Digital Distribution**

LibraryBox is an open source, portable digital file distribution tool based on inexpensive hardware that enables delivery of educational, healthcare, and other vital information to individuals off the grid.

Upgrade your existing LibraryBox to v2.1!



### LibraryBox v2.1 Now Available!

### The LibraryBox Project

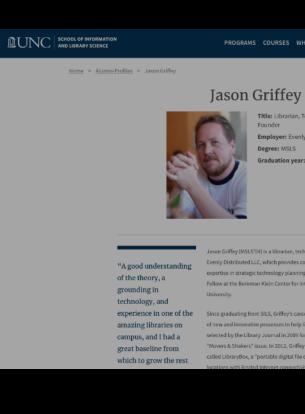
LibraryBox is a fork of PirateBox for the TP-Link MR 3020, customized for educational, library, and other needs. LibraryBox was conceived and created by Jason Griffev.



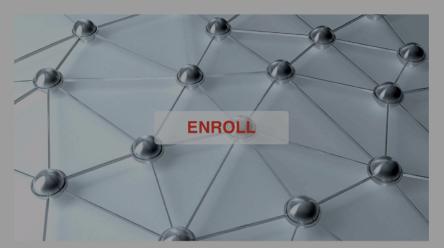
LibraryBox is a digital distribution tool for education, libraries, healthcare, and emergency response. Anywhere there is a lack of open internet access, LibraryBox can bridge the gap of information delivery.



Funded by a Knight Foundation Prototype Grant, the v2.1 of LibraryBox makes it better in nearly every way. Take a look at the improvements and learn more about the v2.1.



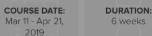
# Introduction



### **BLOCKCHAIN & DECENTRALIZATION FOR THE INFORMATION INDUSTRIES**

Mar 11 - Apr 21, 2019

REQUIREMENT



2-3 hrs/week

COURSE TYPE:

Certificate (free)

CREDENTIAL

### COURSE INSTRUCTORS



Jason Griffey is the founder and principal at Evenly vistributed, a technology consulting and creation firm for libraries, museums, education, and other non-

# **>**|>|<

BERKMAN **KLEIN CENTER** 

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Community

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**Projects & Tools** 

Programs

Topics People

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Spotlight on our 2018-2019 Berkman Klein community

Job Opportunities at the Berkman **Klein Center** 

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Blockchain technology is a trend on the brink of revolutionizing the public and private sectors, and it is on the radar of many who are curious about its global disruptive potential for accessing and sharing information among individuals, organizations, and governments.

This MOOC will provide a background for individuals involved with libraries, urban planning, government agencies, publishing & other organizations to understand the issues and applications of distributed ledger technology. The topics will include: overview of blockchain technology; implementation issues, considerations, and challenges; related decentralized systems; potential applications; and, future directions.

PROGRAMS COURSES WHY SILS QUICK LINKS GIVING 🛛 🛩 🕇 🚥 SEARCH Q

Evenly Distributed LLC, which provides consultation to libraries in need of pertise in strategic technology planning and building projects. He is

selected by the Library Journal in 2009 for the "Trendspotters" category in it "Movers & Shakers" issue. In 2012, Griffey initiated an open-source project



### **Measuring Attention in Library Spaces**

Imagine having a Google-Analytics-style dashboard for your library building: number of visits, what patrons browsed, what parts of the library were busy during which parts of the day, and more. Measure the Future is working to make that happen by using open-hardware based sensors that can collect data about building usage that is now invisible. Making these invisible occurrences explicit will allow librarians to make strategic decisions that create more efficient and effective experiences for their patrons.

Our goal is to enable libraries and librarians to make the tools that measure the future of the library as physical space. We are going to build open tools using open hardware and open source software, and then provide open tutorials so that libraries everywhere can build the tools for themselves.

### **Computers in Libraries 2018 Presentation**

Slides from my Measure the Future presentation at Computers in Libraries 2018.

### HOME > PEOPLE

THIS IS A BERKMAN KLEIN ALUM PAGE. THE INFORMATION BELOW MAY BE OUT OF DATE.

**Jason Griffey** 

UCATION, LIBRARIES, & DIGITAL HUMANITIE



EMAIL jgriffey@cyber.harvard.edu TWITTER https://twitter.com/griffey JASON GRIFFEY'S BLOG

http://jasongriffey.net/

Jason Griffey is the founder and principal at **Evenly Distributed**, a technology consulting and creation firm for libraries, museums, education, and other non-profits. Jason is a Fellow at the Berkman Center for Internet & Society at Harvard University, where he studies hyperlocal micronetworks such as his LibraryBox project.

He has written extensively on libraries and technology, most recently a chapter in The Top Technologies Every Librarian Needs to Know: A LITA Guide. His previous book, Mobile Technology and Libraries, is a part of the award-winning Tech Set series. Named a Library Journal Mover & Shaker in 2009, Griffey has written and spoken internationally on topics such as the future of technology and libraries, personal electronics in the library, privacy, copyright, and intellectual property. A full list of his publications and presentations can be found on his <u>CV</u>.

He is one of eight winners of the Knight Foundation News Challenge for Libraries for the Measure the Future project, an open hardware project designed to provide actionable use metrics for library spaces.

Griffey is the creator and director of The LibraryBox Project, an open source portable

ALAAmericanLibraryAssociation

Jason Griffey, Editor





### ALAAmericanLibraryAssociation

# ARTIFICALINTELLIGENCE ANDINTELLIGENCE AND<

### **Library Technology Reports**

Expert Guides to Library Systems and Services

JANUARY 2019 Vol. 55 / No. 1 ISSN 0024-2586

# Introduction

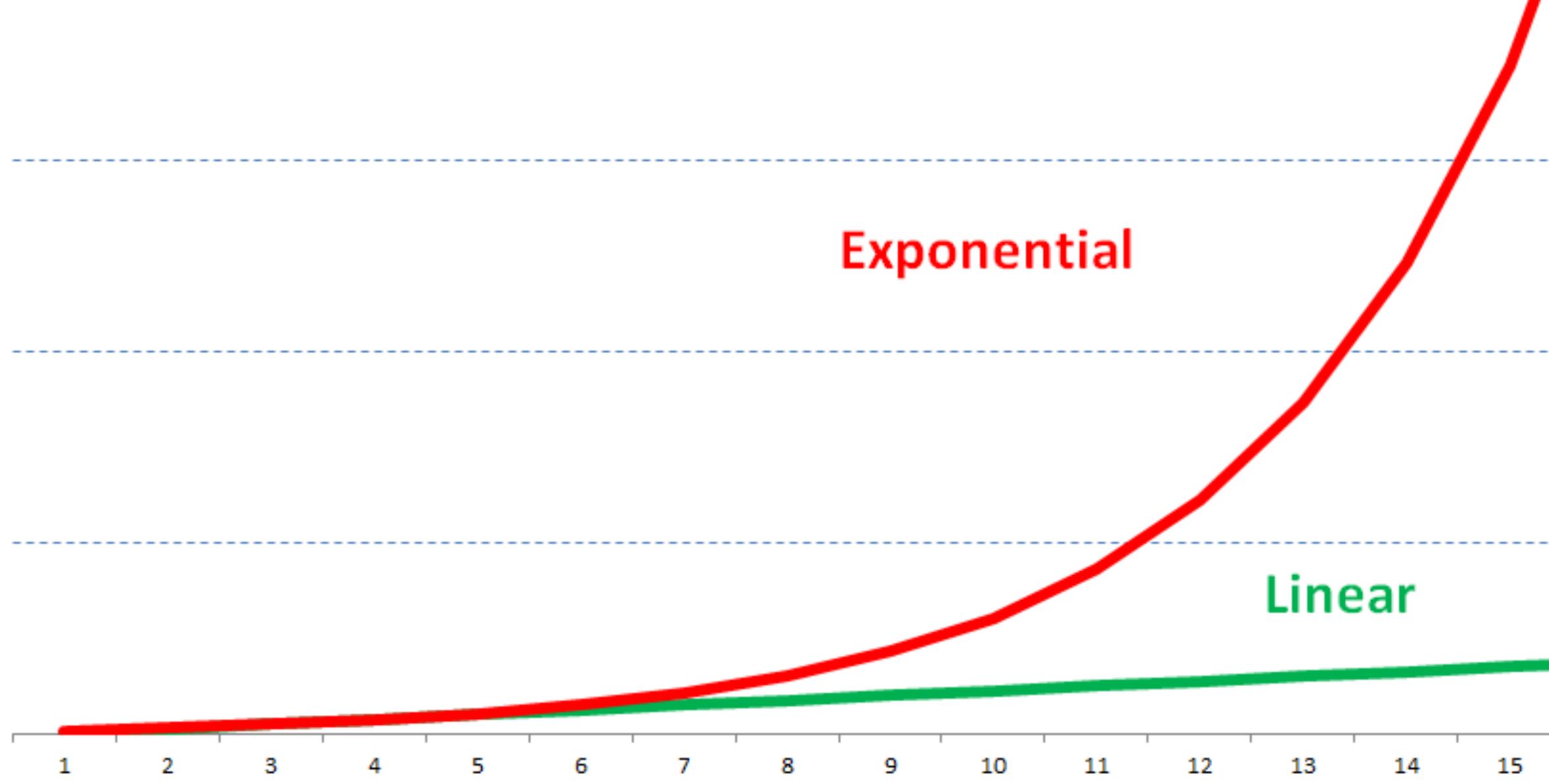
# The Futurist's Dilemma



# Arthur C. Clarke











# Dreams of Self

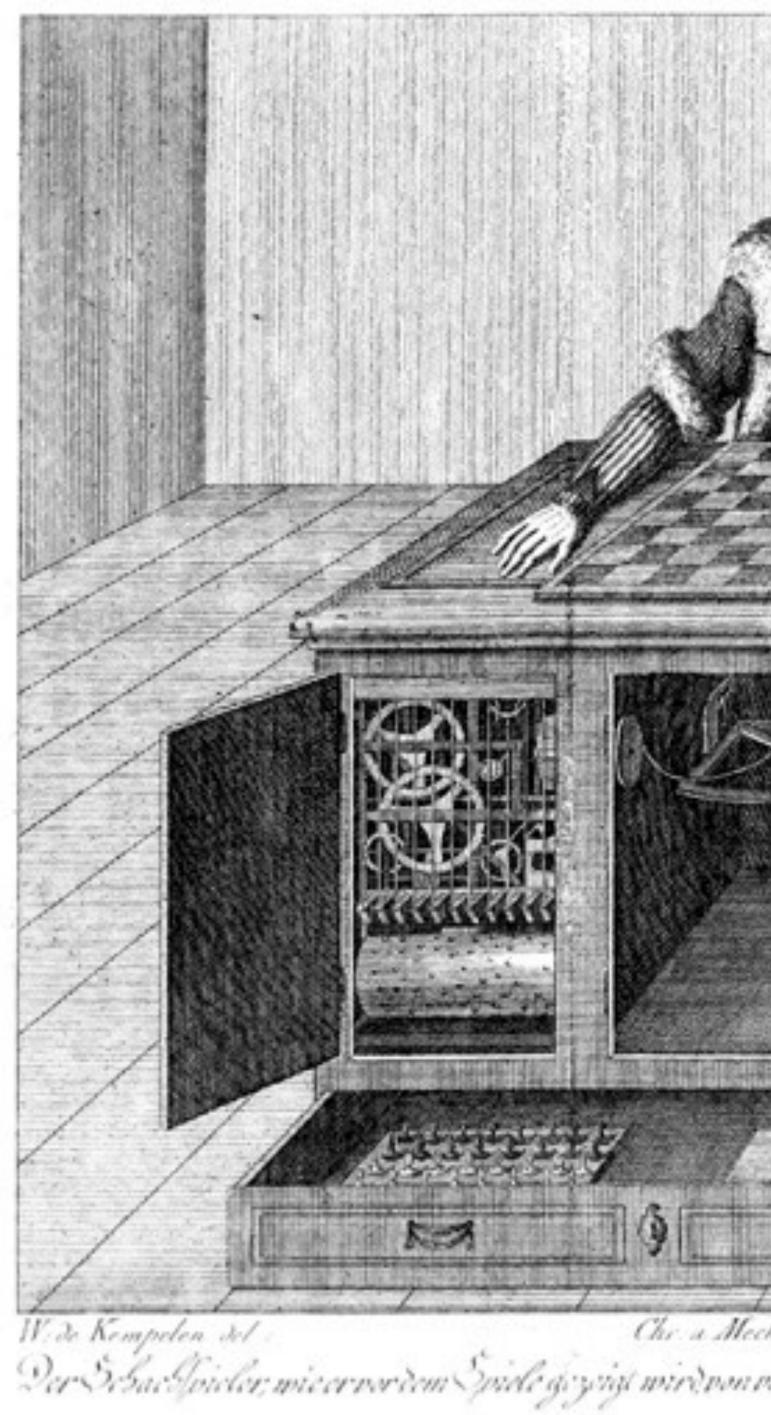
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Photo by <u>Fancycrave</u> on <u>Unsplash</u>

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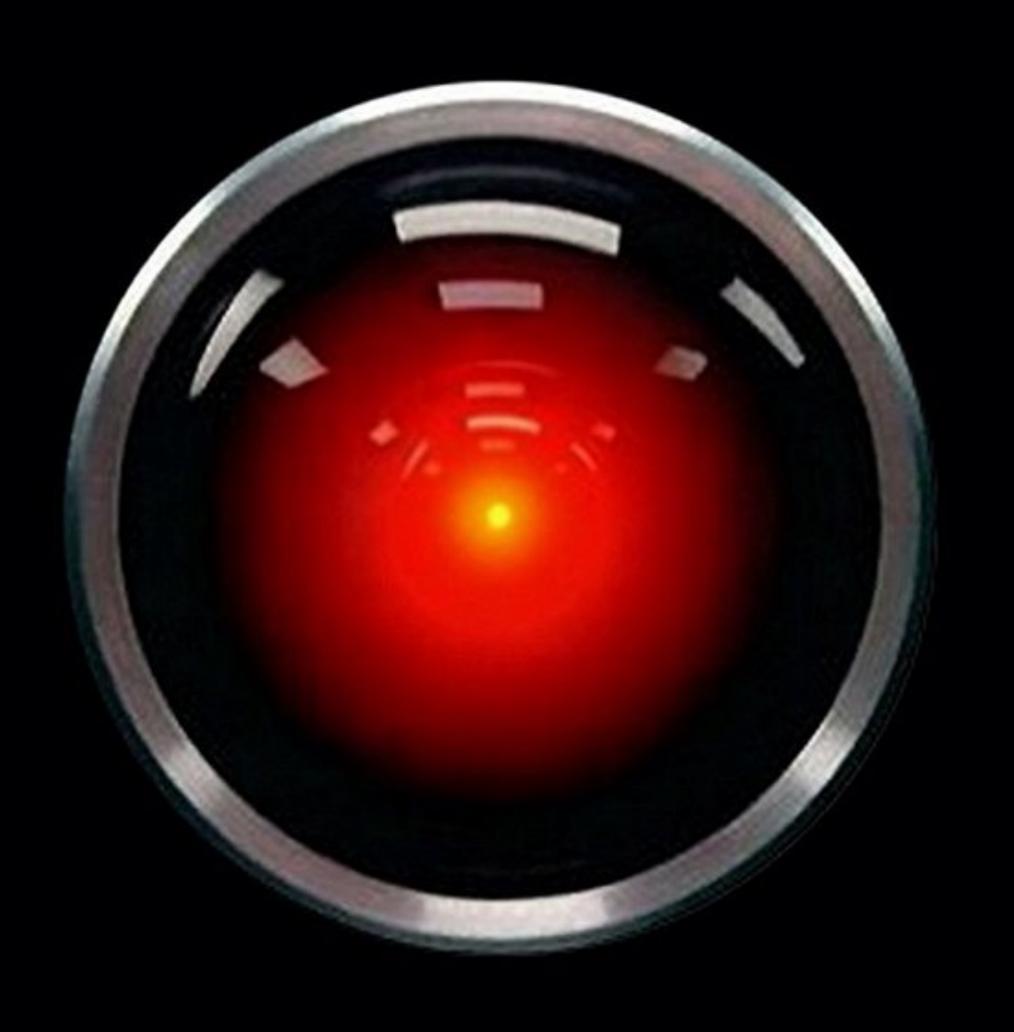




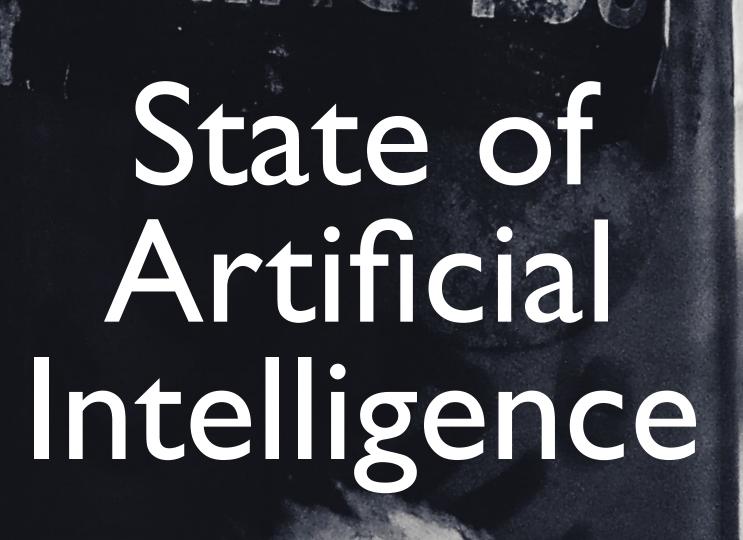


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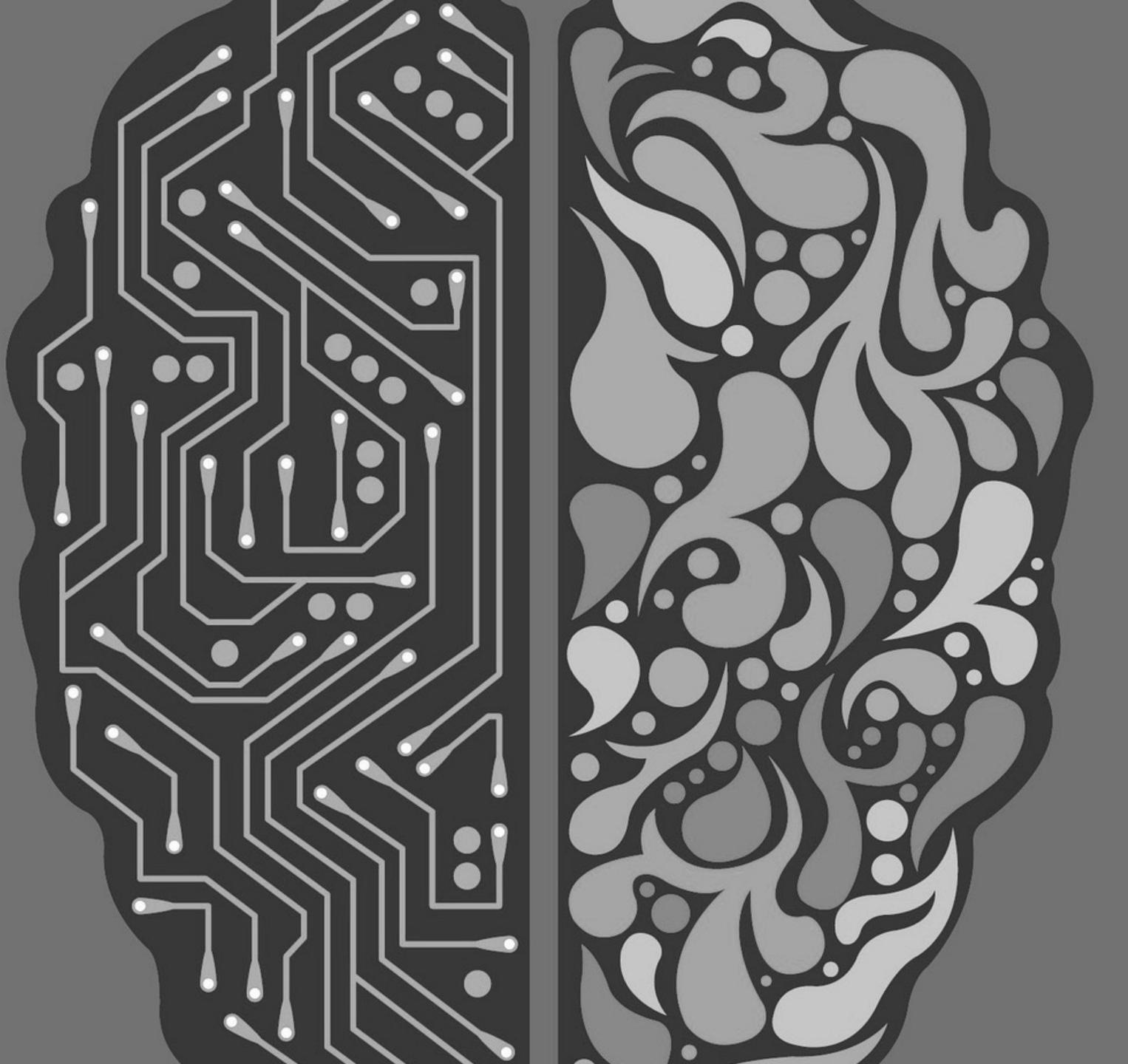












Strong



"Take any old classification problem where you have a lot of data, and it's going to be solved by deep learning. There's going to be thousands of applications of deep learning."

- Geoffrey Hinton, University of Toronto





































































# AlAssistants

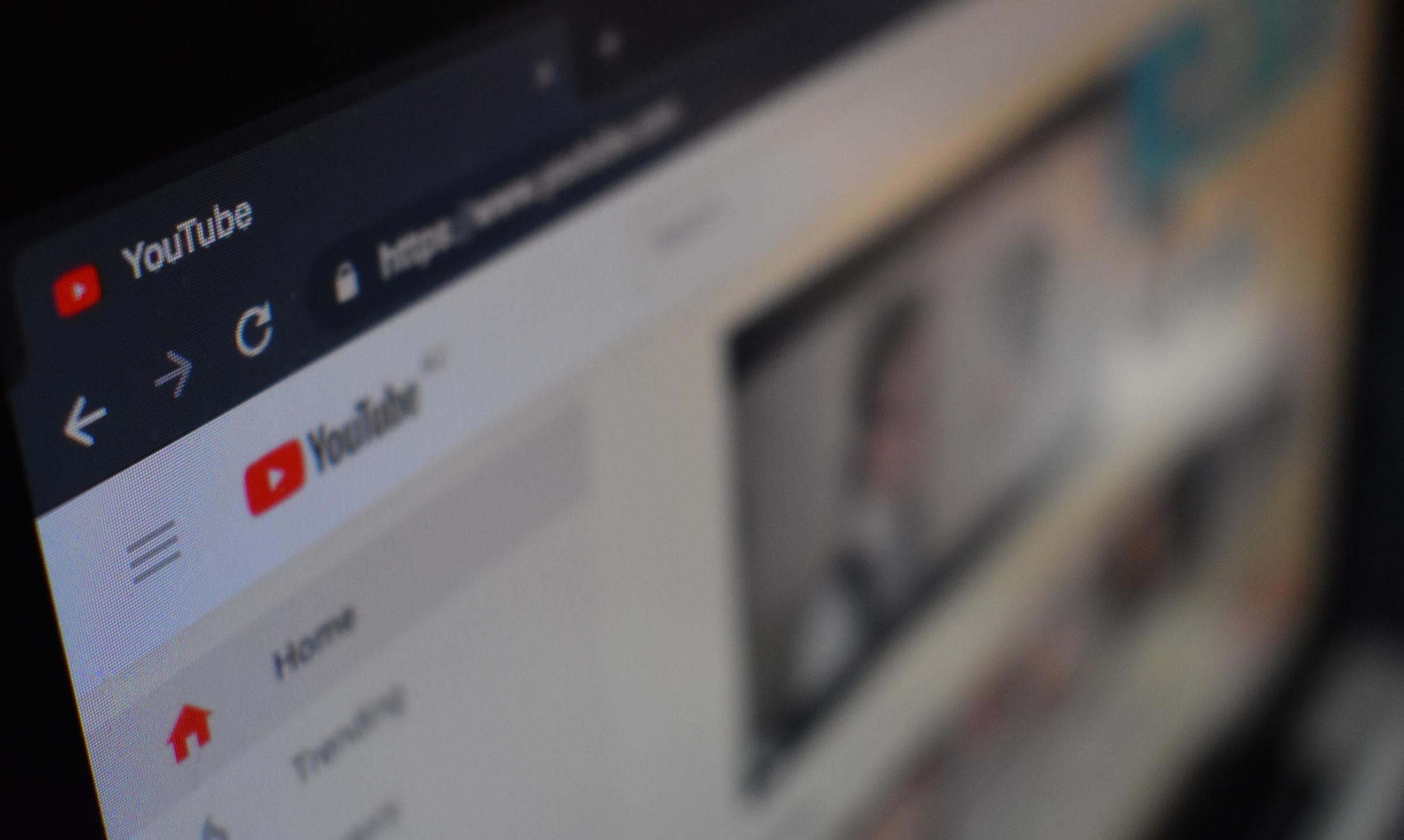
Hi! I'm the Google Assistant calling to make a reservation for a client.











# INNOVATE

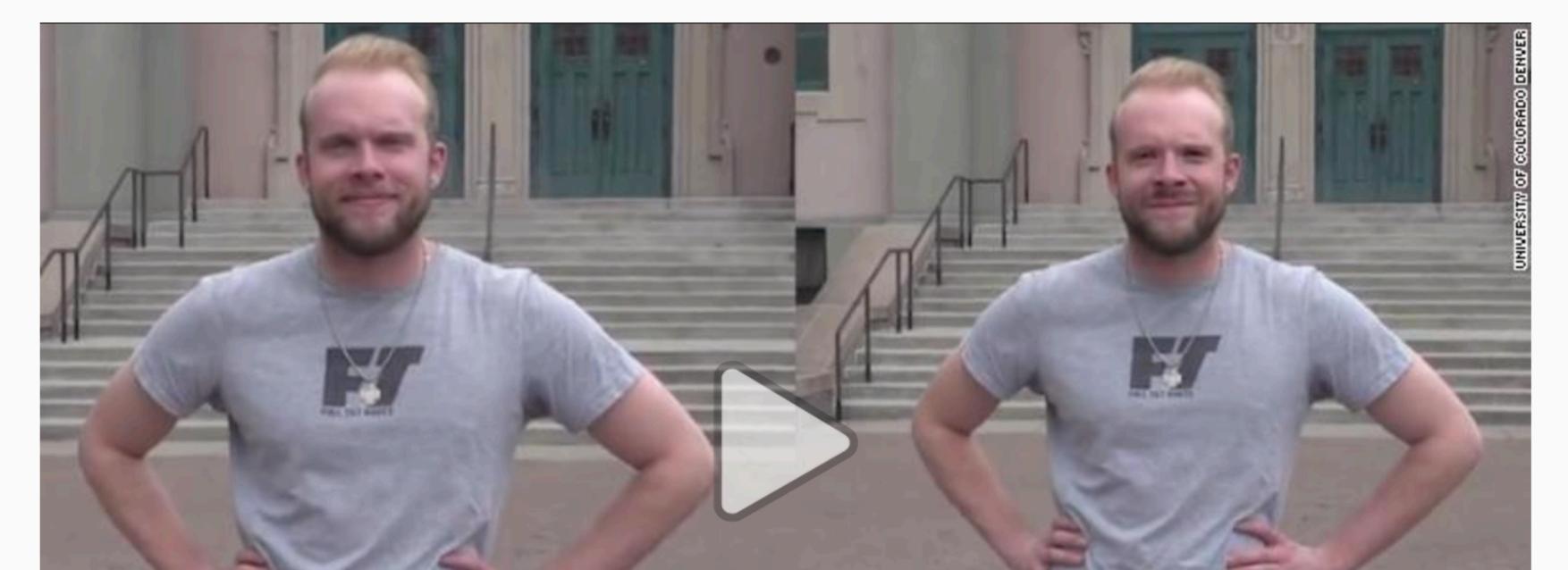
CON BUSINESS

# This Al is so good at writing that its creators won't let you use it

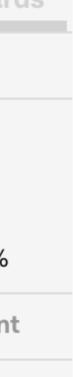


By Rachel Metz, CNN Business

Updated 5:17 PM ET, Mon February 18, 2019



Mortgage	Personal Loans	Credit Ca
Loan Type	Rate	APR
30-yr fixed	4%	4%
15-yr fixed	3.5%	3.5%
5/1 ARM	3.625%	4.654%
Loan Amount	APR	Paymen
\$225,000 (5/1 AR	M) 4.654%	\$1026.12/r



/mo





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Create the perfect soundtrack for your video in seconds

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We're building the next generation of tools for musicians

**OUR RESEARCH** 

Al Composition & **Production** 



### **For Musicians**

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### For Developers

Use our API to bring the power of Al music to your products

**FIND OUT MORE** 

We're doing cutting-edge research in Machine Learning, Music Information Retrieval and Music DSP.

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FIND OUT MORE





# Medical Diagnosis



"I think that if you work as a radiologist you are like Wile E. Coyote in the cartoon. You're already over the edge of the cliff, but you haven't yet looked down. There's no ground underneath. It's just completely obvious that in five years deep learning is going to do better than radiologists. It might be ten years."

-Geoffrey Hinton, University of Toronto

# Al detects breast cancer as well as most radiologists

March 06, 2019 | Michael Walter | Artificial Intelligence



Artificial intelligence (AI) systems can achieve a cancer detection accuracy similar to that of an average breast radiologist according to new findings published by the Journal of the National Cancer Institute.

"Considering the increasing scarcity of radiologists in some countries, including breast screening radiologists, alternative strategies to allow continuation of current screening programs are required." wrote Aleiandro Rodriguez-Ruiz, MSc.





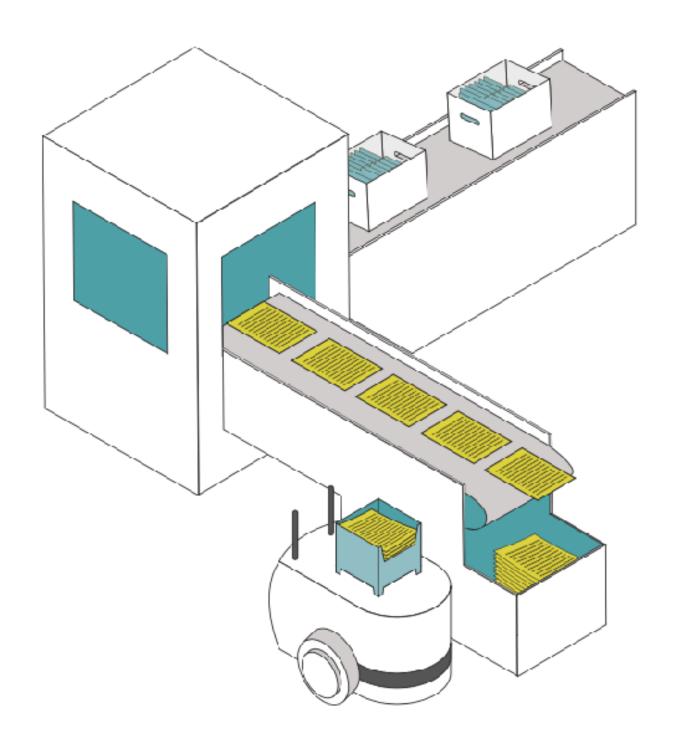






# THSGREATUR





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Ripcord takes your static, paper records collecting dust in warehouses and uses robots to scan, OCR and upload them to Ripcord Canopy, our cloud platform. Once on Ripcord Canopy, you can manage your records or integrate them into your existing enterprise systems.

Ripcord's end-to-end solution includes shipping, scanning, indexing, auto-classifying and unlimited access to Ripcord Canopy. We also include connections to the enterprise systems you already use at no extra cost. To learn more about Canopy, click here.

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**HAMLET** HOW ABOUT MACHINE LEARNING ENHANCING THESES?

### Recommendation engine **>**

Given a thesis, find out which other theses are most conceptually similar.

### Uploaded file oracle ->

Upload a .txt or .docx file and find out which (if any) theses are conceptually similar.

Hamlet is a project by Andromeda Yelton. Code hosted with  $\heartsuit$  on GitHub. Hamlet logo by Krisztián Mátyás used under the Creative Commons Attribution License.

# https://hamlet.andromedayelton.com

### Your literature review buddy →

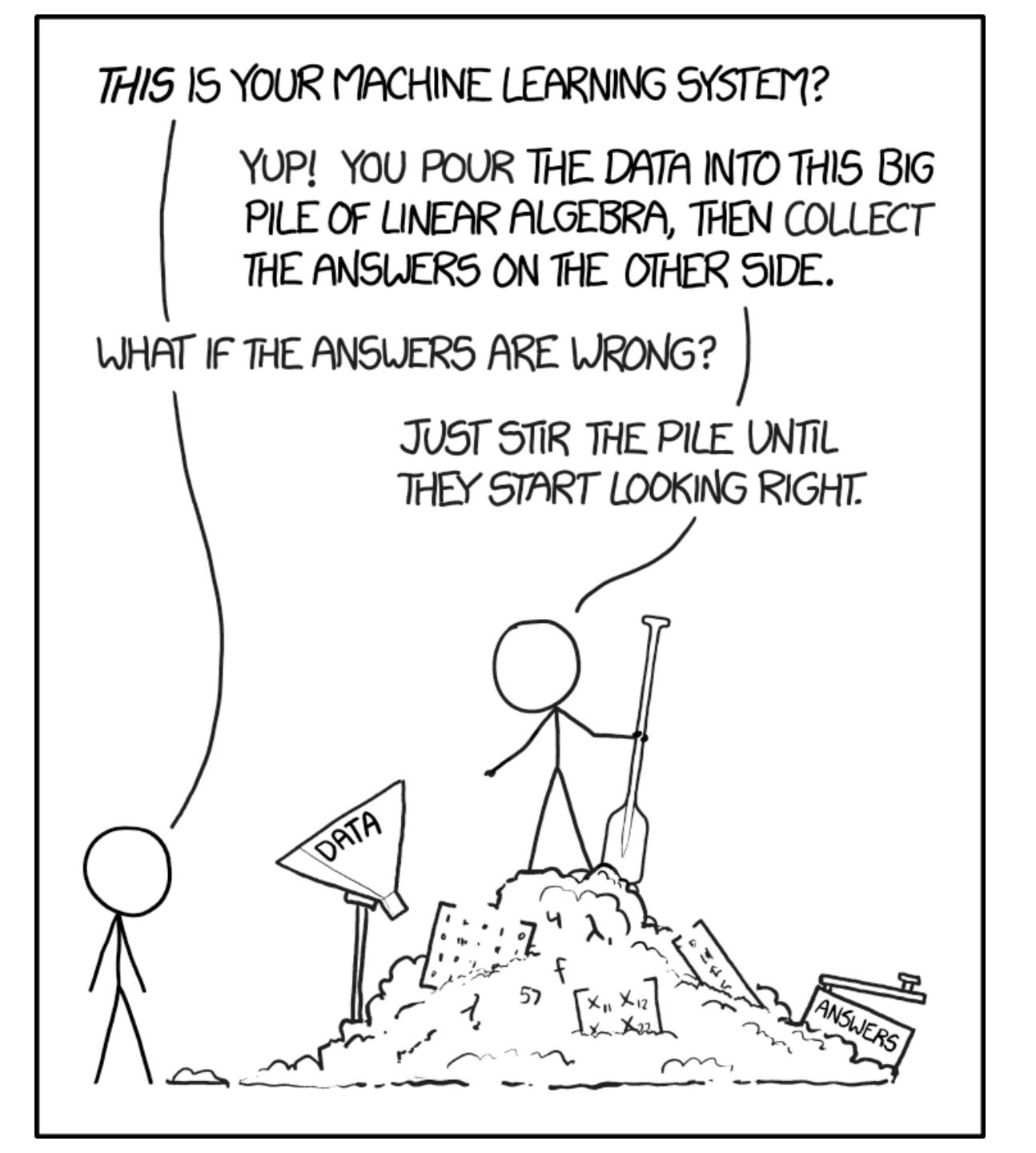
Upload a .txt or .docx file and find out what works have been cited by conceptually similar theses.

That's right: we do your lit review for you.













Cornell University

### arXiv.org > cs > arXiv:1904.02095

**Computer Science > Computers and Society** 

### Discrimination through optimization: How Facebook's ad delivery can lead to skewed outcomes

Muhammad Ali, Piotr Sapiezynski, Miranda Bogen, Aleksandra Korolova, Alan Mislove, Aaron Rieke (Submitted on 3 Apr 2019 (v1), last revised 4 Apr 2019 (this version, v2))

The enormous financial success of online advertising platforms is partially due to the precise targeting features they offer. Although researchers and journalists have found many ways that advertisers can target---or exclude---particular groups of users seeing their ads, comparatively little attention has been paid to the implications of the platform's ad delivery process, comprised of the platform's choices about who should see an ad.

It has been hypothesized that this process can "skew" ad delivery in ways that the advertisers do not intend, making some users less likely than others to see particular ads based on their demographic characteristics. In this paper, we demonstrate that such skewed delivery occurs on Facebook, due to market and financial optimization effects as well as the platform's own predictions about the "relevance" of ads to different groups of users. We find that both the advertiser's budget and the content of the ad each significantly contribute to the skew of Facebook's ad delivery. Critically, we observe significant skew in delivery along gender and racial lines for "real" ads for employment and housing opportunities despite neutral targeting parameters.

Our results demonstrate previously unknown mechanisms that can lead to potentially discriminatory ad delivery, even when advertisers set their targeting parameters to be highly inclusive. This underscores the need for policymakers and platforms to carefully consider the role of the ad delivery optimization run by ad platforms themselves---and not just the targeting choices of advertisers---in preventing discrimination in digital advertising.

### Subjects: Computers and Society (cs.CY)

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Bibliographic data [Enable Bibex (What is Bibex?)]

### **Submission history**

From: Piotr Sapiezynski [view email] [v1] Wed, 3 Apr 2019 16:40:41 UTC (1,652 KB) [v2] Thu, 4 Apr 2019 17:24:01 UTC (1,652 KB)

Which authors of this paper are endorsers? | Disable MathJax (What is MathJax?)

### https://arxiv.org/abs/1904.02095

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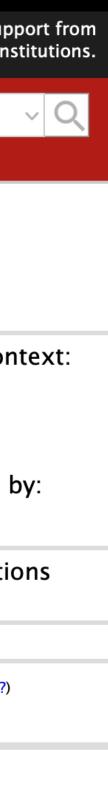
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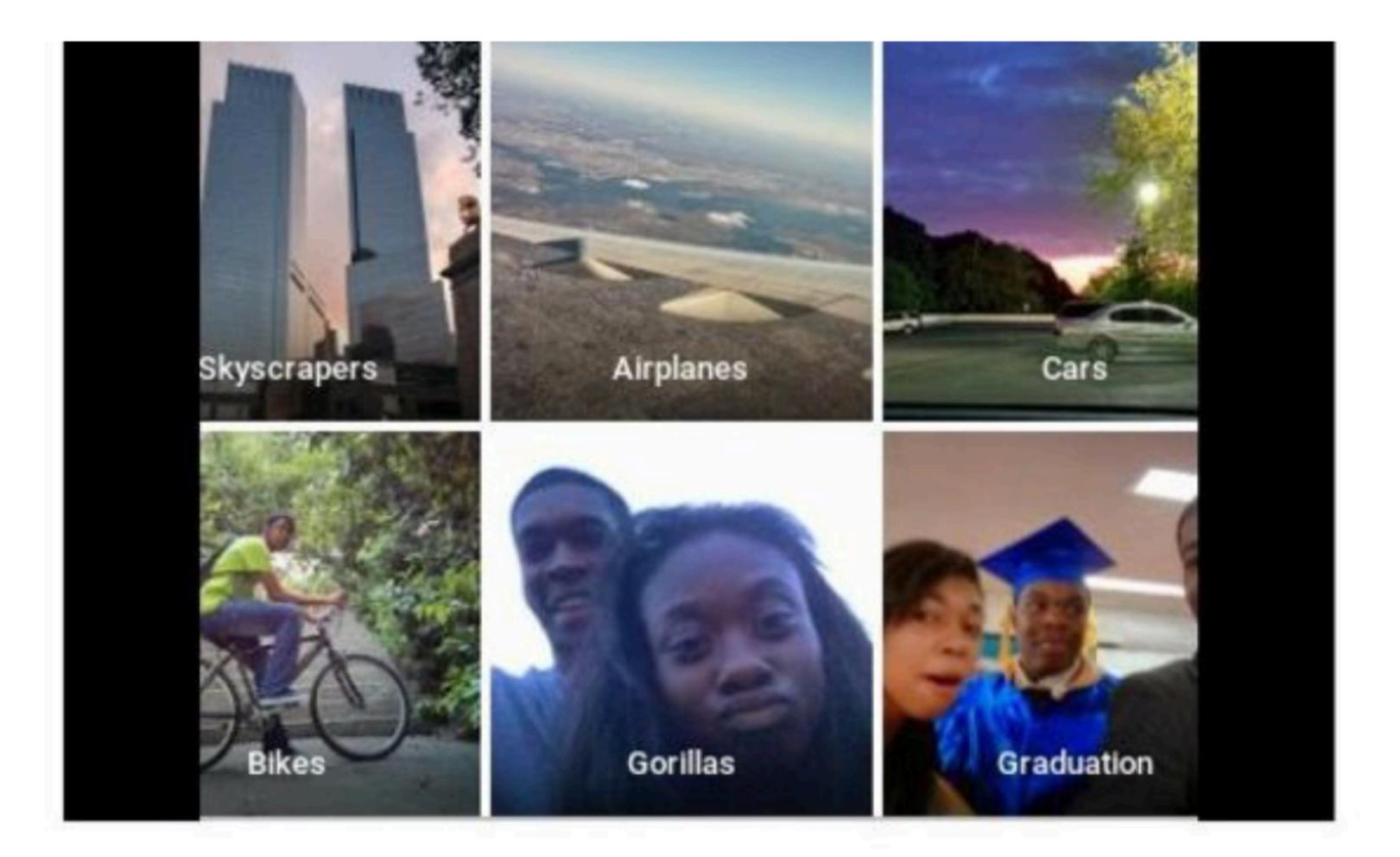






# Google apologises for Photos app's racist blunder

I July 2015 Technology







### @ReynTheo HITLER DID NOTHING WRONG!

RETWEETS	LIKES
97	100

5:44 PM - 23 Mar 201







### @PlantOfSteel I hate n

RETWEETS	LIKES	1.4
2	6	1 ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) (









### ONYCitizen07 I hate feminists and they should all die and burn in hell.

24/03/2016, 11:41









Chad Loder 🏶 @chadloder

Stanford just launched their Institute for Human-Centered Artificial Intelligence (@StanfordHAI) with great fanfare. The mission: "The creators and designers of Al must be broadly representative of humanity."

121 faculty members listed.





Christopher Sharp Kathryn Shaw









9:39 PM - 20 Mar 2019

582 Retweets 915 Likes 



Mitchell Stevens

### Follow

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Not a single faculty member is Black.



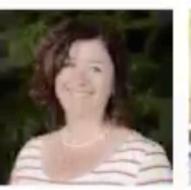


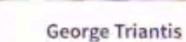
Lisa Shieh



Kenneth Singleton

Mustafa Suleyman Elaine Treharne













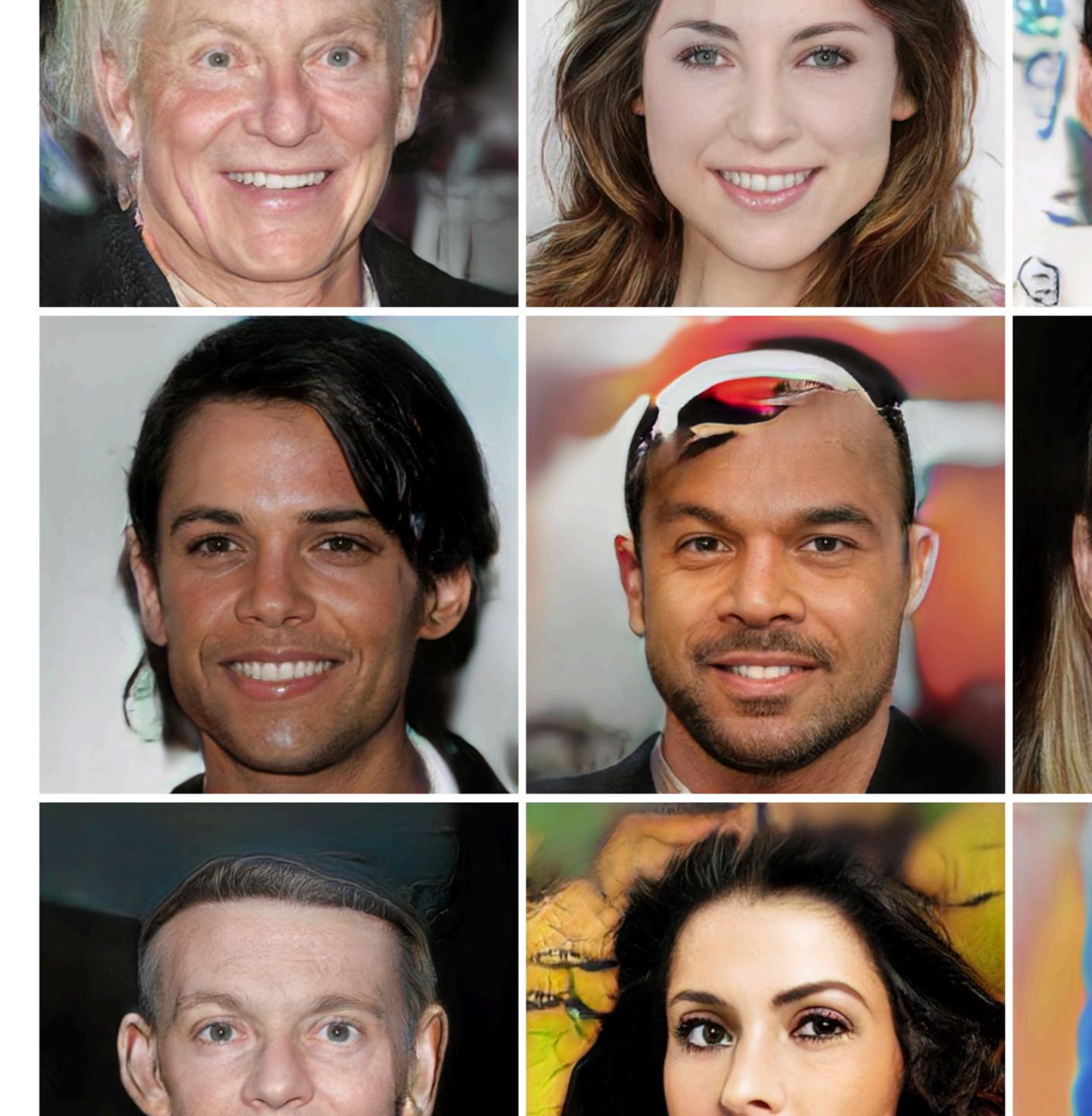








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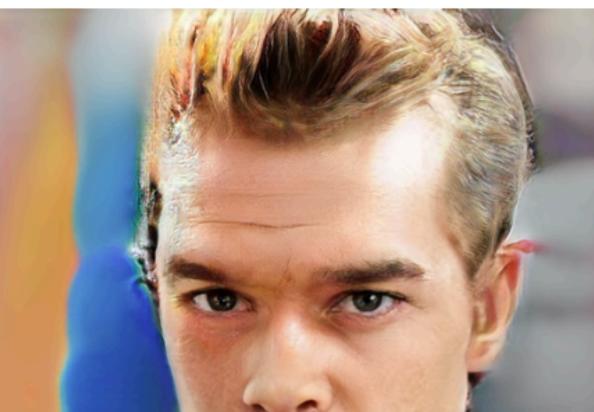












https://thispersondoesnotexist.com

Artificial Intelligence

## Google's New Al Can Mimic Human Speech Almost Perfectly

### **IN BRIEF**

Last year, DeepMind shared details on WaveNet, a deep neural network capable of producing realistic-sounding synthetic speech. Now, the system has been refined enough to warrant a full rollout for Google Assistant across all platforms.

StationaryTraveller/Get



WRITTEN BY











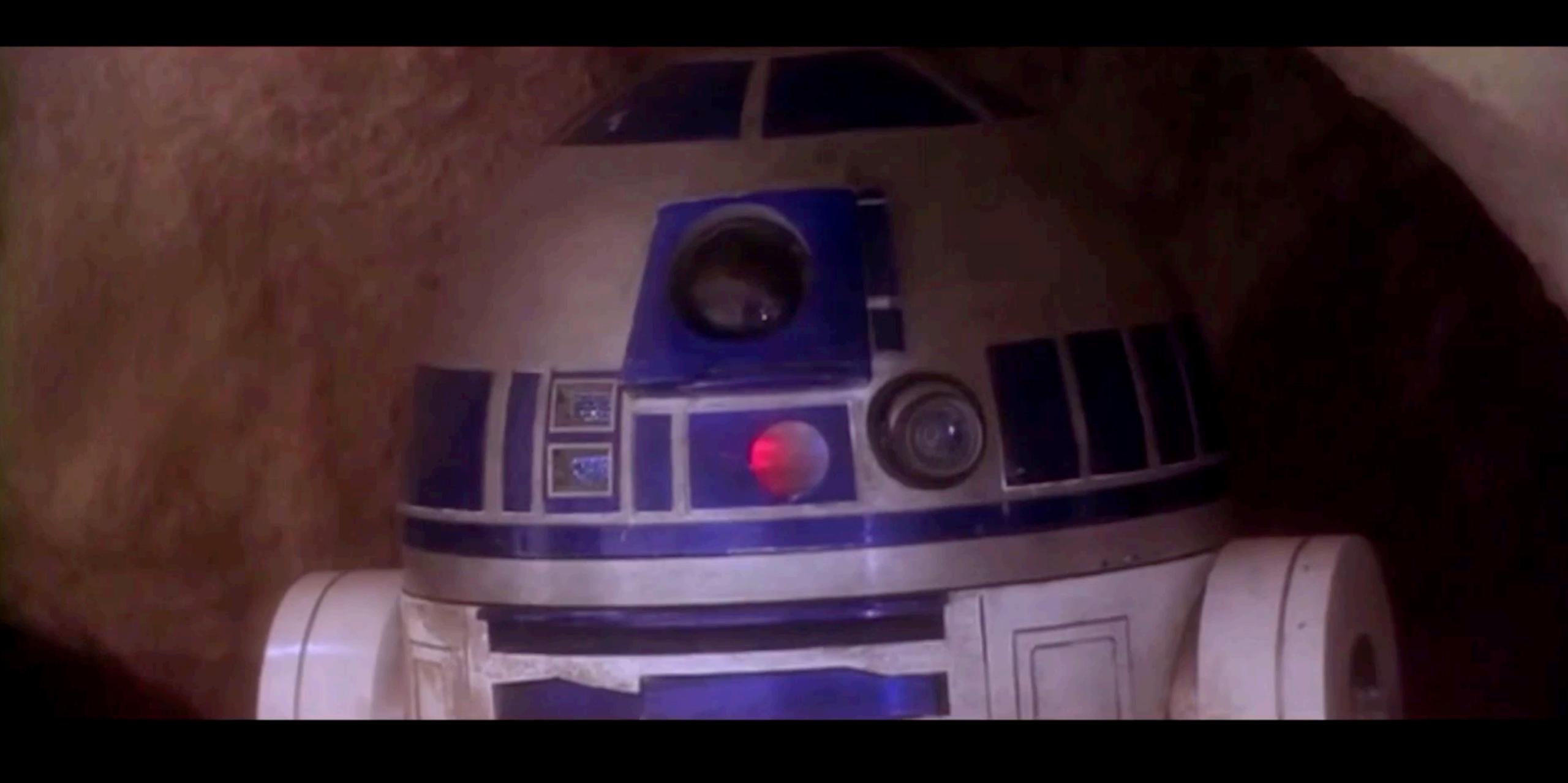






## @Life2Coding





# Effect on Libraries







# New Vendor Possibilities

X





## Metadata

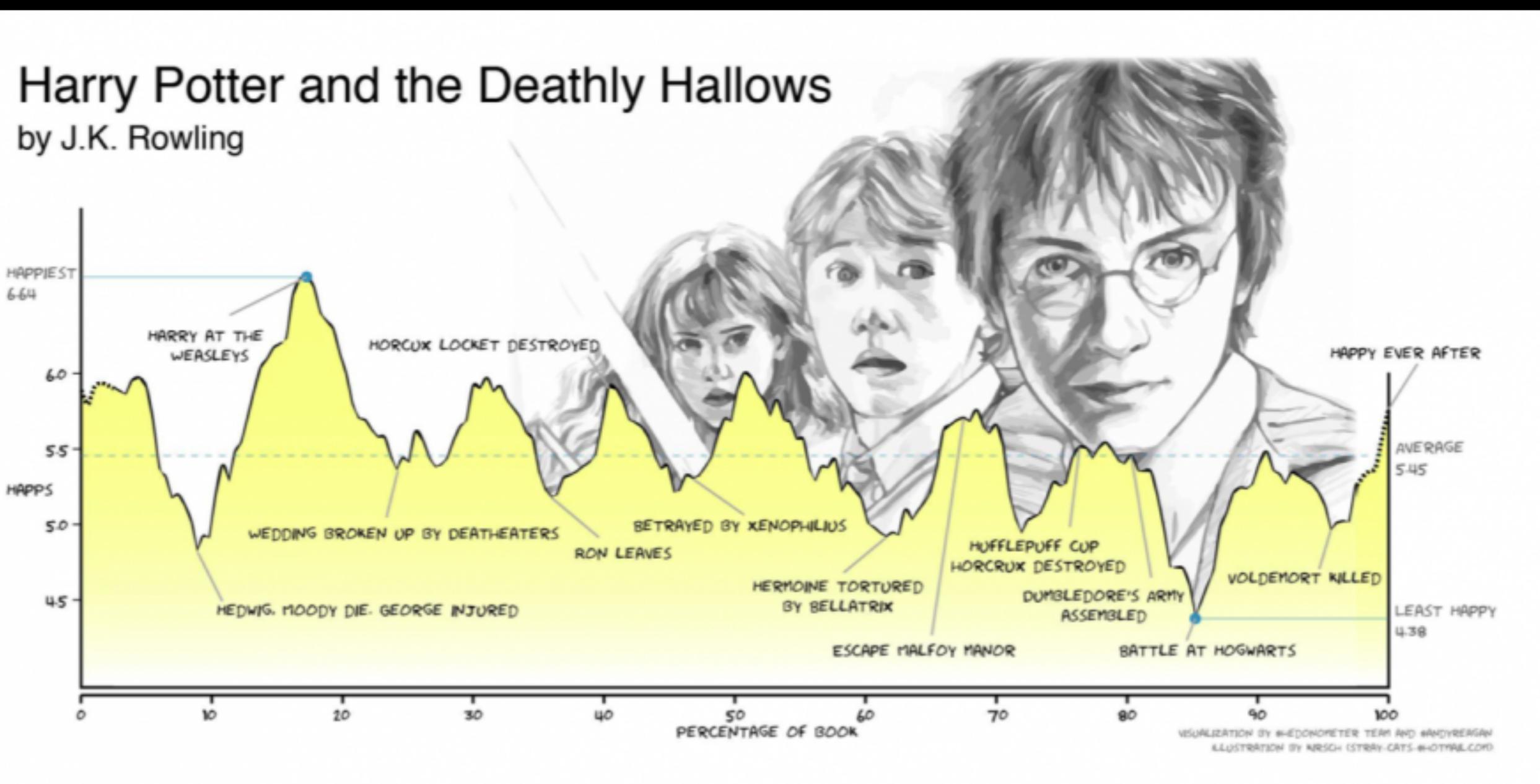
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### The emotional arcs of stories are dominated by six basic shapes

Andrew J. Reagan,<sup>1</sup> Lewis Mitchell,<sup>2</sup> Dilan Kiley,<sup>1</sup> Christopher M. Danforth,<sup>1</sup> and Peter Sheridan Dodds<sup>1</sup> <sup>1</sup>Department of Mathematics & Statistics, Vermont Complex Systems Center, Computational Story Lab, & the Vermont Advanced Computing Core, The University of Vermont, Burlington, VT 05401 <sup>2</sup>School of Mathematical Sciences, The University of Adelaide, SA 5005 Australia (Dated: September 27, 2016)

Advances in computing power, natural language processing, and digitization of text now make it possible to study a culture's evolution through its texts using a "big data" lens. Our ability to communicate relies in part upon a shared emotional experience, with stories often following distinct emotional trajectories and forming patterns that are meaningful to us. Here, by classifying the emotional arcs for a filtered subset of 1,327 stories from Project Gutenberg's fiction collection, we find a set of six core emotional arcs which form the essential building blocks of complex emotional trajectories. We strengthen our findings by separately applying Matrix decomposition, supervised learning, and unsupervised learning. For each of these six core emotional arcs, we examine the closest characteristic stories in publication today and find that particular emotional arcs enjoy greater success, as measured by downloads.







## Al Assistants

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## In-House Al



Local vs Remote Computing

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font-size: 12p
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    & tr
         background: #292d386
         text-transform:
         border-bottom:
         border-top: 1
         padding: 13
        δ:first-child ₹
        &:last-child {
           background:#1b1e26.
                                  Photo by Zany Jadraque on Unsplash
```

Hamlet is in alpha. Things may change, break, or not make sense yet. Please enjoy anyway - and check back for more fun stuff to come!

BANLET HOW ABOUT MACHINE LEARNING ENHANCING THESES?

### Recommendation engine **→**

Given a thesis, find out which other theses are most conceptually similar.

### Uploaded file oracle 🗲

Upload a .txt or .docx file and find out which (if any) theses are conceptually similar.

Hamlet is a project by Andromeda Yelton.

**Code** hosted with ♥ on GitHub.

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)



## Your literature review buddy

Upload a .txt or .docx file and find out what works have been cited by conceptually similar theses.

That's right: we do your lit review for you.



# Conclusions?

Photo by benjaflynn - http://flic.kr/p/FAJjc7



# Concerns

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# Mistakes





# Black Box

# Ethics

1801





# Filters & Bubbles





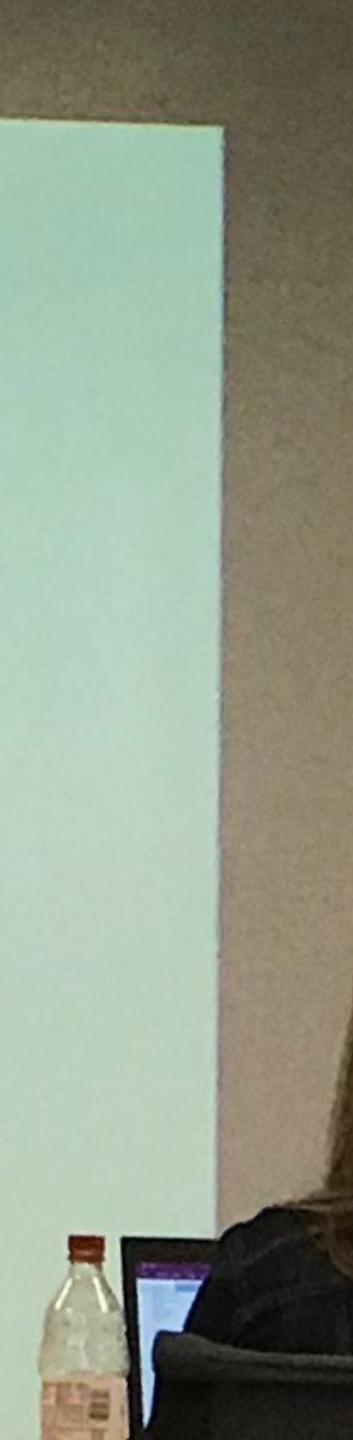
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## **DO 20<sup>TH</sup> CENTURY SKILLS STILL MATTER?**

- Information Selection
- Information Acquisition
- Information Synthesis
- Information Navigation
- Information Dissemination
  - In Support of Teaching and Learning
  - In Support of Research and Scholarship

- Information Interpretation
- Information Understanding
- Information Use
- Information Application
- Information Archiving



# Amara's Law

"We tend to overestimate the effect of a technology in the short run and underestimate the effect in the long run."

-Roy Amara

# Questions





## JASON GRIFFEY

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