

The risks of technology

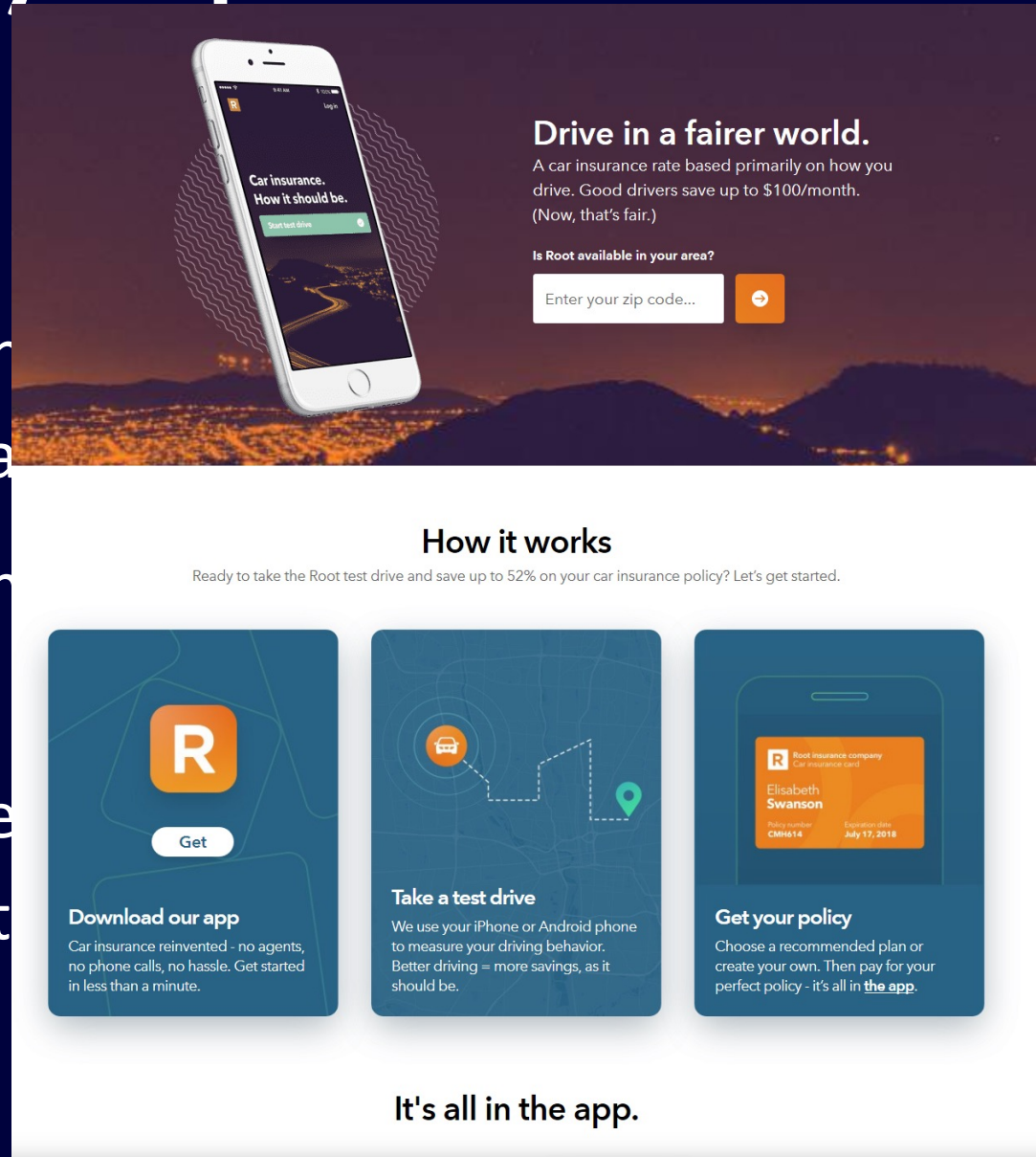
Raghavendra Rau, University of Cambridge




How does technology help the world of business?

It helps us analyze information.

- It creates (one-way) transparency, how you react, and can position goods and services
- Solves problems of information asymmetry, hazard and adverse selection
- If you don't trust the businesses, distributed ledger technology to




Drive in a fairer world.
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We use your iPhone or Android phone to measure your driving behavior. Better driving = more savings, as it should be.



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Choose a recommended plan or create your own. Then pay for your perfect policy - it's all in [the app](#).

It's all in the app.



Making inferences from information

The economist cannot see what you think, only what you do.

If I offer you an apple or a banana at the same price, and you pick the banana what do I infer?

But what are you reacting to? Suppose you prefer:

- apples > bananas
 - organic > regular and
 - ripe > green.
- Are you choosing between **ripe organic** bananas and **regular green** apples?

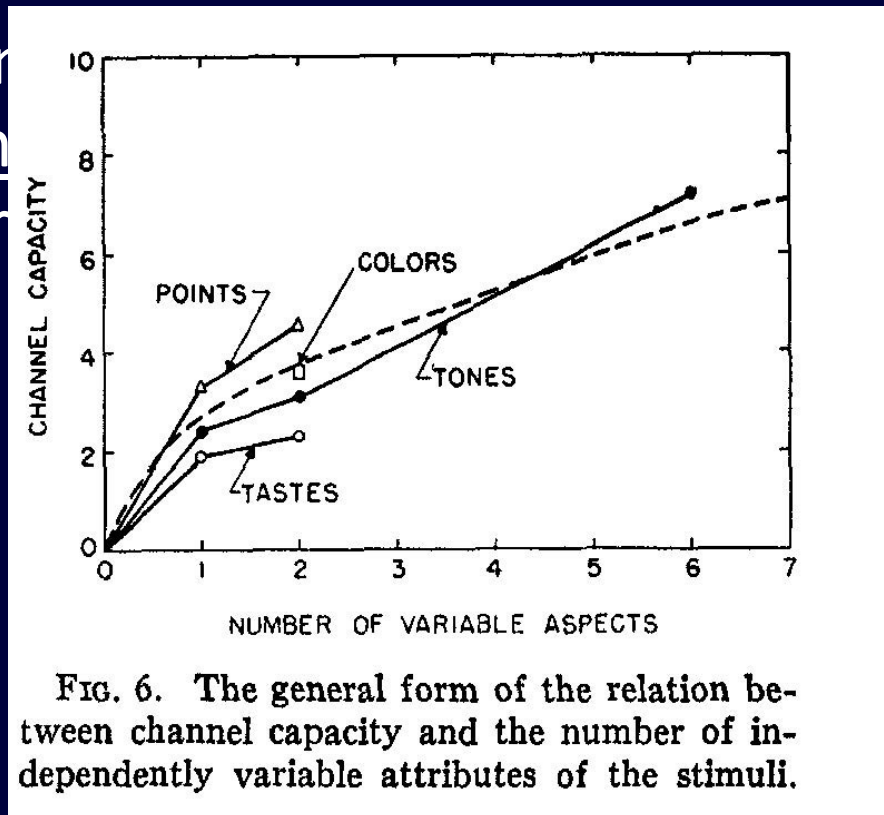
What dimension is more important to you? What happens if there are more dimensions (how and where it was grown, its sugar content, nutritional value, and shelf life)?



We are bad at processing more than a few dimensions

- Except for visual patterns, the human brain isn't very good at processing huge amounts of information.

• Human
of in
chan



struggle about half a dozen distinct pieces
-we can't even compare three
products.

[George A. Miller, "The Magical Number Seven Plus or Minus Two: Some Limits on Our Capacity for Processing Information, Psy Review, 63 \(2\), 1956](#)



Early attempts at manipulation

FRAPPUCCINO® Blended Beverage

	Tall
Coffee	245
Mocha/White Mocha	295
Java Chip	285
Caramel/Espresso	285
Caramel Java Chip	325

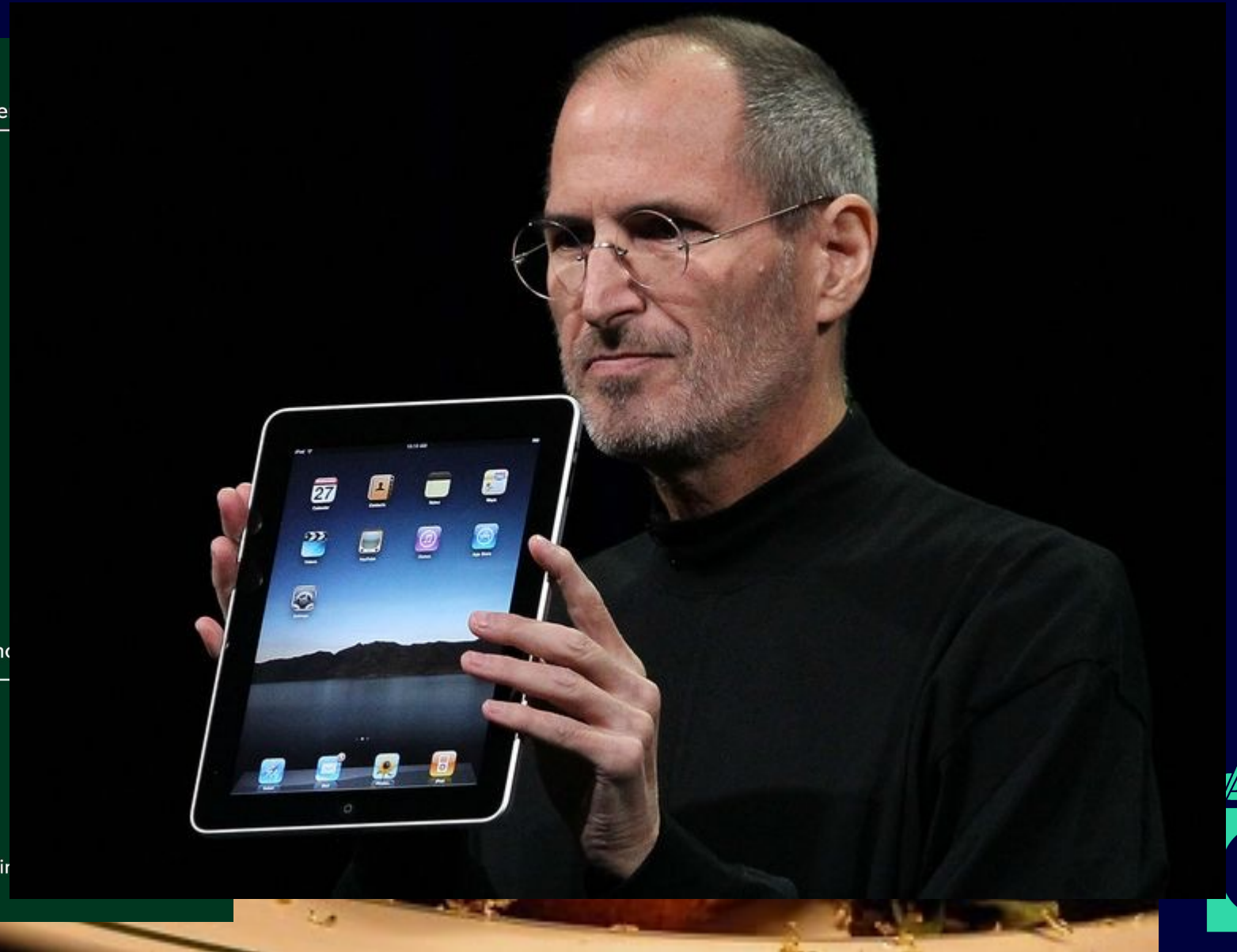
Coffee-Free

Vanilla Cream	275
Strawberries & Crème	
Double Chocolate Chip	305
Cold Coffee	280

COLD BREW Slow steeped for 48 hours

Cold Brew Black	260
Vanilla Sweet Cream Cold Brew	305
Citrus Cold Brew	345
Vietnamese Cold Brew	320

Save ₹10 when you use your own Starbucks tumbler in participating stores.
Taxes Extra.



What does tech do?

It personalizes business approach based on y

- Target predicting pregnancy?

How does the process work?

- A/B testing
- Cambridge Analytica

The New York Times

LinkedIn Ran Social Experiments on 20 Million Users Over Five Years

A study that looked back at those tests found that relatively weak social connections were more helpful in finding jobs than stronger social ties.



Researchers examined changes that LinkedIn had made to its “People You May Know” algorithm to test what sociologists call the “strength of weak ties.” Sundry Photography/Alamy

By **Natasha Singer**

Published Sept. 24, 2022 Updated Sept. 25, 2022

LinkedIn ran experiments on more than 20 million users over five years that, while intended to improve how the platform worked for members, could have affected some people’s livelihoods, according to a new study.

Tech giants like LinkedIn, the world’s largest professional network, routinely run large-scale experiments in which they try out different versions of app features, web designs and algorithms on different people. The longstanding practice, called A/B testing, is intended to improve consumers’ experiences and keep them engaged, which helps the companies make money through premium membership fees or advertising. Users often have no idea that companies are running the tests on them. (The New York Times [uses such tests](#) to assess the wording of headlines and to make decisions about the products and features the company releases.)



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Meet your Goldman Sachs Smart Beta 60/40 portfolio.

Based on what you've told us about your time horizon, risk tolerance and investment strategy, we recommend our Smart Beta portfolio allocation of 60% stocks and 40% bonds, using the ETFs listed below.

The investment objective for this Smart Beta portfolio is to grow your assets at a moderate amount of risk.

Stock allocation

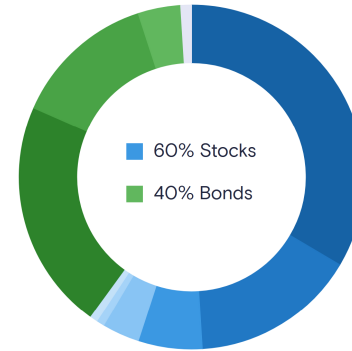
Stocks provide exposure to economic growth and have the potential to increase in value and beat inflation over the long term. They also include a greater risk of loss than bonds.

GSLC	Goldman Sachs ActiveBeta U.S. Large Cap Equity ETF U.S. Large Capitalization Stocks	33.50%
GSIE	Goldman Sachs ActiveBeta International Equity ETF International Developed Market Stocks	15.50%
GSSC	Goldman Sachs ActiveBeta U.S. Small Cap Equity ETF U.S. Small Capitalization Stocks	6.00%
GEM	Goldman Sachs ActiveBeta Emerging Markets Equity ETF Emerging Market Stocks	3.50%
VNQ	Vanguard REIT ETF U.S. Real Estate	0.75%
VNQI	Vanguard Global ex U.S. Real Estate ETF International Real Estate	0.75%

Bond allocation

Bonds have two major benefits: they provide cash flow and temper risk more than stocks during market ups and downs. The cash allocation in your portfolio helps us to manage your portfolio more efficiently.

SHM	SPDR Short Term Muni Bond ETF U.S. Investment Grade Short-Term Municipal Bonds	21.60%
MUB	iShares National Muni Bond ETF U.S. Investment Grade Municipal Bonds	13.40%
GHYB	Goldman Sachs Access High Yield Corporate Bond ETF U.S. High Yield Bonds	4.00%
USD	Cash	1.00%



Want to adjust your asset allocation?

Here are two other options.



More conservative
50% Stocks
50% Bonds

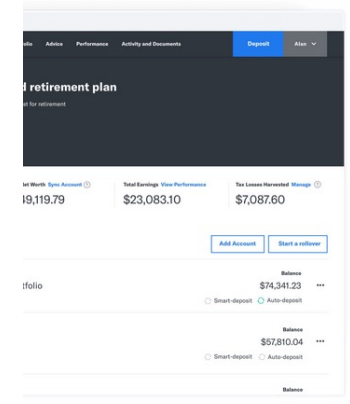


More aggressive
70% Stocks
30% Bonds



Satisfaction guaranteed.

If you're not satisfied, we'll work to make it right.



Perhaps it reduces discrimination

Bertrand, Marianne, and Sendhil Mullainathan, 2014
Are Loretta and Lakisha more employable than Lakisha and Jamal? A field experiment
American Economic Review 94, 991-1013.

Edelman, Benjamin, Michael Luca, and Dan Svirsky
The sharing economy: Evidence from a field experiment
Economics 9, 1-22.

The New York Times

Is an Algorithm Less Racist Than a Loan Officer?

Digital mortgage platforms have the potential to reduce discrimination. But automated systems provide rich opportunities to perpetuate bias, too.



By Jennifer Miller
Sept. 18, 2020



Perhaps it helps you learn

The Guardian Newspaper of the year

TikTok accidentally detected my ADHD.
For 23 years everyone missed the warning signs

Matilda Boseley



Learning you have ADHD on TikTok is now such a common phenomenon it has become its own meme, but it can be tricky

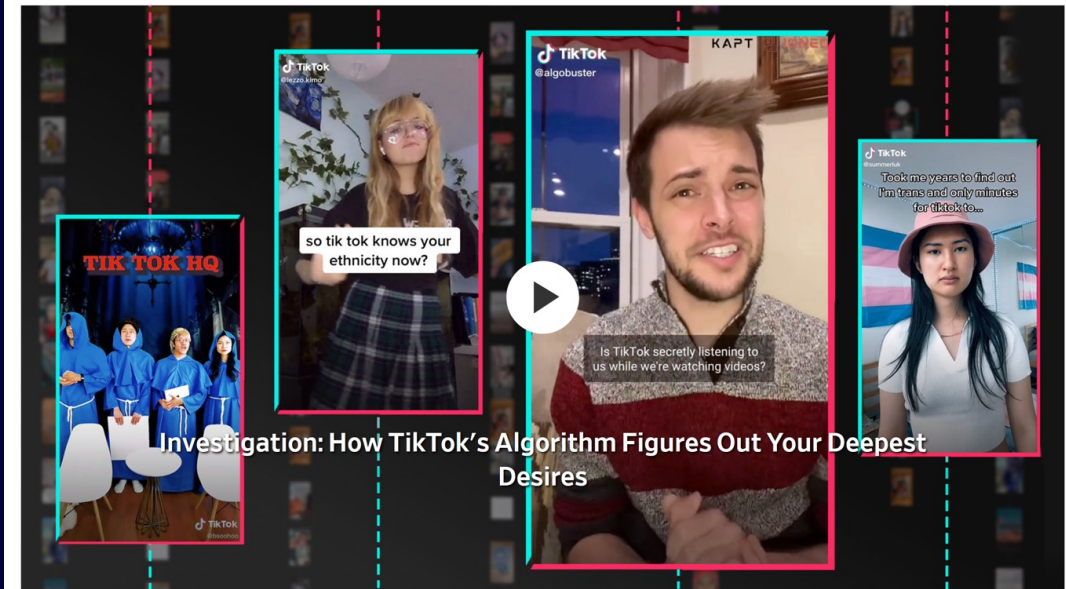


📷 'I'd never been behind at school, I wasn't hyperactive all the time, I'd never even been that disruptive in class. It wasn't until I downloaded TikTok that I truly considered I might have ADHD.'
Photograph: Christopher Hopkins

THE WALL STREET JOURNAL.

TikTok Diagnosis Videos Leave Some Teens Thinking They Have Rare Mental Disorders

Faulty self-diagnosis makes treatment a challenge; 'We felt for a long time that we were competing with social media,' one teen's father said



A Wall Street Journal investigation found that TikTok only needs one important piece of information to figure out what you want: the amount of time you linger over a piece of content. Every second you hesitate or rewatch, the app is tracking you. Photo illustration: Laura Kammermann/The Wall Street Journal



By [Julie Jargon](#) [Follow](#)

Dec. 26, 2021 5:30 am ET



Perhaps it does too good a job?

Citizen Browser

How Big Pharma Finds Sick Users on Facebook

The Markup, May 6, 2021

We found drug ads targeted at users interested in everything from bourbon to therapy

By [Colin Lecher](#)

If you're a drug manufacturer looking for patients, one company has become a major destination in the past few years: Facebook.

The social media giant, through its power to target users based on their interests, is especially attractive to pharmaceutical companies looking to sell drugs to potential patients. The Washington Post [reported last year](#) that health and pharmaceutical companies spent almost \$1 billion on just Facebook mobile ads in 2019. The draw? Unlike a traditional TV or radio ad, Facebook's ad categories help those companies target their drug ads at users who likely suffer from a specific illness the drug treats.

And data from The Markup's Citizen Browser project—which collects Facebook data from thousands of users—shows how precise and wide-ranging that targeting is.

Though Facebook does not offer advertisers categories that explicitly identify people's health conditions, The Markup identified dozens of ads for prescription pharmaceuticals targeted at people with "interests" in topics like "bourbon," "oxygen," and "Diabetes mellitus awareness."

Indeed, The Markup found, "awareness" of a disease is a frequent proxy for illness in targeting decisions made by advertisers.

The screenshot shows a GitHub repository interface. At the top, it displays 'main' branch, '1 branch', and '0 tags'. There are buttons for 'Go to file' and 'Code'. Below this, a commit by 'colinlecher' is shown, titled 'Update README.md', dated 'on 6 May' with '7 commits'. The file list includes 'README.md' (updated 2 months ago) and 'facebook-pharmaceutical-ads.csv' (added 2 months ago). The README content is visible, starting with the title 'Citizen Browser: How Pharmaceutical Ads Are Targeted To Users' and a description: 'This repository contains data underlying the findings of our story, "How Big Pharma Finds Sick Users on Facebook," from our series Citizen Browser. Our methodology is described in "How We Built a Facebook Inspector."'.

Data

`facebook-pharmaceutical-ads.csv` shows several examples of drug ads promoted on Facebook, and how they were targeted to users.

Data in the file is arranged as follows:

column	description
name	The name of the drug advertised to users
ad_url	A link to the ad in Facebook's ad archive, if available
url_domain	The domain the ad linked out to from Facebook
interest_type	The user interest used to target the ad

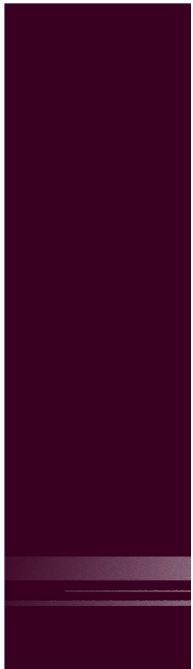
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And the information leaks

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Bianca Bagnarelli

By Alisha Harid:
Jan. 28, 2021

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COMMISSIONERS:

UNITED STATES OF AMERICA
BEFORE THE FEDERAL TRADE COMMISSION

Joseph J. Simons, Chairman
Noah Joshua Phillips
Rohit Chopra
Rebecca Kelly Slaughter
Christine S. Wilson

In the Matter of
FLO HEALTH, INC.

DOCKET NO.

COMPLAINT

1. Respondent Flo Health, Inc. ("Flo Health") is a Delaware corporation with its principal office or place of business at 1013 Centre Road, Suite 403-B, Wilmington, Delaware 19805.
3. Millions of women use the Flo App, giving Respondent details of their menstruations and gynecological health on the promise that the app will help predict ovulation and aid in pregnancy and childbirth. These users trust Respondent with intimate details of their reproductive health because Respondent repeatedly promised to protect the information and keep it secret. Indeed, Respondent's privacy policies stated, time and again, that Respondent would not share users' health details with anyone.
4. In fact, beginning in 2016, Respondent handed users' health information out to numerous third parties, including Google, LLC ("Google"); Google's separate marketing service, Fabric ("Fabric"); Facebook, Inc., through its Facebook Analytics tool ("Facebook"); marketing firm AppsFlyer, Inc. ("AppsFlyer"); and analytics firm Flurry, Inc. ("Flurry"). And Respondent took no action to limit what these companies could do with the users' information. Rather, they merely agreed to each company's standard terms of service. By doing so, Respondent gave these third parties the ability to use Flo App users' personal health information expansively, including for advertising.

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It shows up in unexpected places

The New York Times

ADVERTISING

You See Pepsi, I See Coke: New Tricks for Product Placement

The streaming services have data on viewers' spending habits and brand preferences, and they're looking into new ways to use it.



Mirriad, a digital product placement company, incorporated Pepsi into an episode of Univision's "El Dragón" after it was filmed. Univision, "El Dragón"



By Tiffany Hsu

Dec. 20, 2019



And sometimes it makes mistakes

MONEY

rest of world
Reporting Global Tech Stories

South Asia / Money

Loans that hijack your phone are coming to India

Lenders are turning to coercive loan apps that shut down smartphones if customers fall behind on payments.

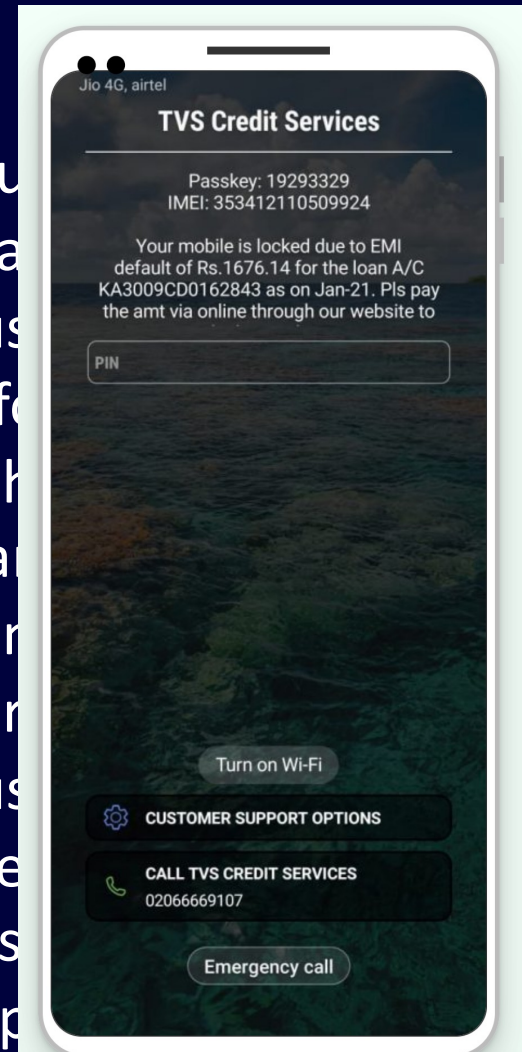


Sajjad Hussain/AFP/Getty Images

By NILESH CHRISTOPHER

17 MARCH 2021 • BENGALURU, INDIA

Step 1: Send an SMS in a regional language.
Step 2: If the user doesn't repay, it forces a wallpaper on the phone.
Step 3: If you are using the app, it will send a notification at the same time the camera is on.
Step 4: If the user is on the loan, free social apps like Instagram are blocked.
Step 5: Shut down all functionalities.



The notification Roshan Zameer received on his Samsung phone alerting him that it would be locked until he makes a payment for about \$23. Zameer bought the phone secondhand online not realizing it was purchased on a loan.



Why does it make mistakes?

Technology
Review



A nurse operates the retinal scanner, taking images of the back of a patient's eye. (Google)
Thai Ministry of Health test for diabetic retinopathy

Artificial intelligence / Machine learning

Hundreds of AI tools have been built to catch covid. None of them helped.

Some have been used in hospitals, despite not being properly tested. But the pandemic could help make medical AI better.

Source: <https://www.technologyreview.com/2021/07/30/1030329/machine-learning-ai-failed-covid-hospital-diagnosis-pandemic>

el, it
ow the difference. Neither



Why does it make mistakes? Goodhart's law

Once a useful number becomes a measure of success, it ceases to be a useful number.

- Textile factories were required to produce quantities of fabric that were specified by length, and so looms were adjusted to make long, narrow strips.
- Uzbek cotton pickers were judged on the weight of their harvest. So they would soak their cotton in water to make it heavier.
- When America's first transcontinental railroad was built, in the eighteen-sixties, companies were paid per mile of track. So a section outside Omaha, Nebraska, was laid down in a wide arc, rather than a straight line, adding several unnecessary (but profitable) miles to the rails.
- NHS 2005 reform: Doctors would be given a financial incentive to see patients within forty-eight hours.



Goodhart

How do you communicate in language you have

- Algorithm to

- Algorithm

Two



VERN

LOW

Borden was rated high risk for future crime. She took a kid's bike and scooter that were sitting outside. She did not reoffend.

Risk Assessment

PERSON			
Name:	Offender #:	DOB:	
Gender:	Marital Status:	Agency:	
Male	Single	DAI	

ASSESSMENT INFORMATION			
Case Identifier:	Scale Set:	Screening Date:	Screening Date:
	Wisconsin Core - Community		

The next few questions are about the family or caretakers that mainly raised you when growing up.

31. Which of the following best describes who principally raised you?

- Current C
- Both Natural Parents
 Natural Mother Only

Residence/Stability

54. How often do you have contact with your family (may be in person, phone, mail)?
 No family Never Less than once/month Once per week Daily
55. How often have you moved in the last twelve months?
 Never 1 2 3 4 5+
56. Do you have a regular living situation (an address where you usually stay and can be reached)?
 No Yes
57. How long have you been living at your current address?
 0-5 mo. 6-11 mo. 1-3 yrs. 4-5 yrs. 6+ yrs.
58. Is there a telephone at this residence (a cell phone is an appropriate alternative)?
 No Yes
59. Can you provide a verifiable residential address?
 No Yes
60. How long have you been living in that community or neighborhood?
 0-2 mo. 3-5 mo. 6-11 mo. 1+ yrs.
61. Do you live with family—natural parents, primary person who raised you, blood relative, spouse, children, or boy/girl friend if living together for more than 1 year?
 No Yes
62. Do you live with friends?
 No Yes
63. Do you live alone?
 No Yes
64. Do you have an alias (do you sometimes call yourself by another name)?
 No Yes

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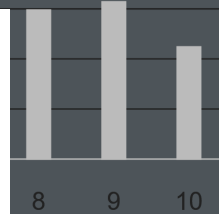
at the time?

, that you know of?

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l or prison?



AFRICAN AMERICAN

44.9%

28.0%

divism 61 percent of the time. But blacks are almost twice as likely to be arrested. It makes the opposite mistake among whites: They are much more likely to be arrested for minor crimes. (Source: ProPublica analysis of data from Broward County, Fla.)

Risk Score

These charts show that scores for white defendants were skewed toward lower-risk categories. Scores for black defendants were not. (Source: ProPublica analysis of data from Broward County, Fla.)



But that means we have to generate the numbers

- FICO credit scores
- Posts on Facebook
- Teachers: RateMyProfessors.com
- Authors: Amazon scores
- Airbnb hosts and guests: Cleanliness scores
- Taskrabbit, Deliveroo drivers, Uber drivers: Have you ever given a bad rating to an Uber driver?
- Fitbit scores: Company health plans
- Peeples
- You can even rate your bowel movements online
- Black Mirror: Nosedive episode



Social engineering

The Washington Post
Democracy Dies in Darkness

Technology

Huawei tested AI software that could recognize Uighur minorities and alert police, report says

An internal report claims the face-scanning system could trigger a 'Uighur alarm,' sparking concerns that the software could help fuel China's crackdown on the mostly Muslim minority group



Workers walk by the perimeter fence of what is officially known as a vocational skills education center in the Xinjiang region of China in 2018. (Thomas Peter/Reuters)

By Drew Harwell and Eva Dou
Dec. 8, 2020 at 3:30 p.m. GMT



Social engineering on a larger scale




INDEPENDENT

News > World > Asia

China wants to give all of its citizens a score – and their rating could affect every area of their lives

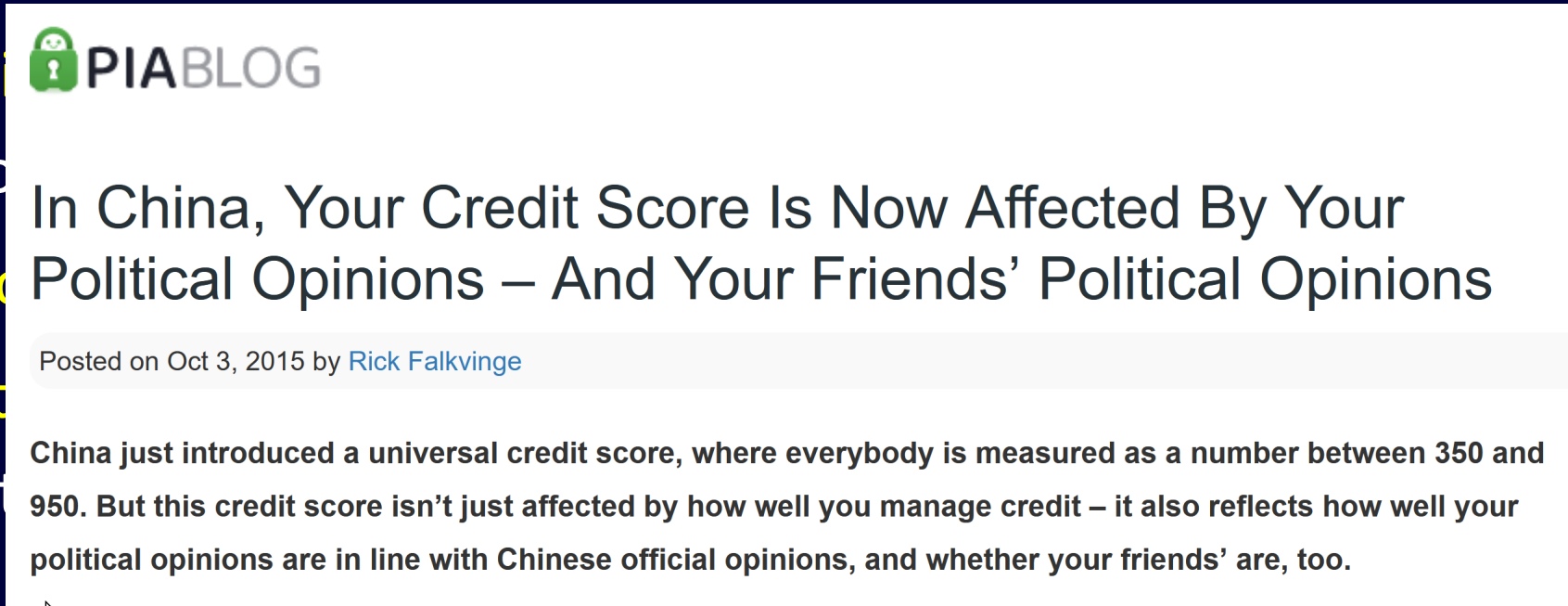
The Communist Party wants to encourage good behaviour by marking all its people using online data. Those who fall short will be denied basic freedoms like loans or travel

Simon Denyer Beijing • Monday 24 October 2016 08:08 •  Comments



How can we construct a score like this?

- Score ranging from 350-950 points depending on five sets of factors:
- **Credit history:** Do you repay your loans?
- **Ability to pay bills on time:** Do you pay your bills on time?
- **Social Stability Index:** How personal information do you share?
- **Behaviour and preferences:** What are your shopping habits. What do you buy?
- **Interpersonal relationships:** What do your choice of online friends and their interactions say about you?



PIABLOG

In China, Your Credit Score Is Now Affected By Your Political Opinions – And Your Friends' Political Opinions

Posted on Oct 3, 2015 by [Rick Falkvinge](#)

China just introduced a universal credit score, where everybody is measured as a number between 350 and 950. But this credit score isn't just affected by how well you manage credit – it also reflects how well your political opinions are in line with Chinese official opinions, and whether your friends' are, too.



So why sign up?

Perks (from Sesame Credit):

- 600 points: Take out a 'Just Spend' loan of up to 5,000 yuan (around \$1,000) to use to shop online on an Alibaba site.
- 650 points: Rent a car without leaving a deposit. Faster check-in at hotels and use of the VIP check-in at Beijing Capital International Airport.
- More than 666 points: Get a cash loan of up to 50,000 yuan from Ant Financial Services.
- Above 700: Apply for Singapore travel without supporting documents, such as an employee letter.
- Above 750: Fast-tracked application to a Schengen visa.

Status symbol

- Increase your odds of getting a date, (The higher your Sesame rating, the more prominent your dating profile is on Baihe)



Is the system being implemented?

- Not yet
- Financial credit scoring pretty much done (like US credit scores)
- Patchy and vague regulations on the social side
- Consequence: local governments are introducing pilot programs that seek to define what social

荣成市人民政府公报

荣成市人民政府办公室

2016年第1期(总第23期)

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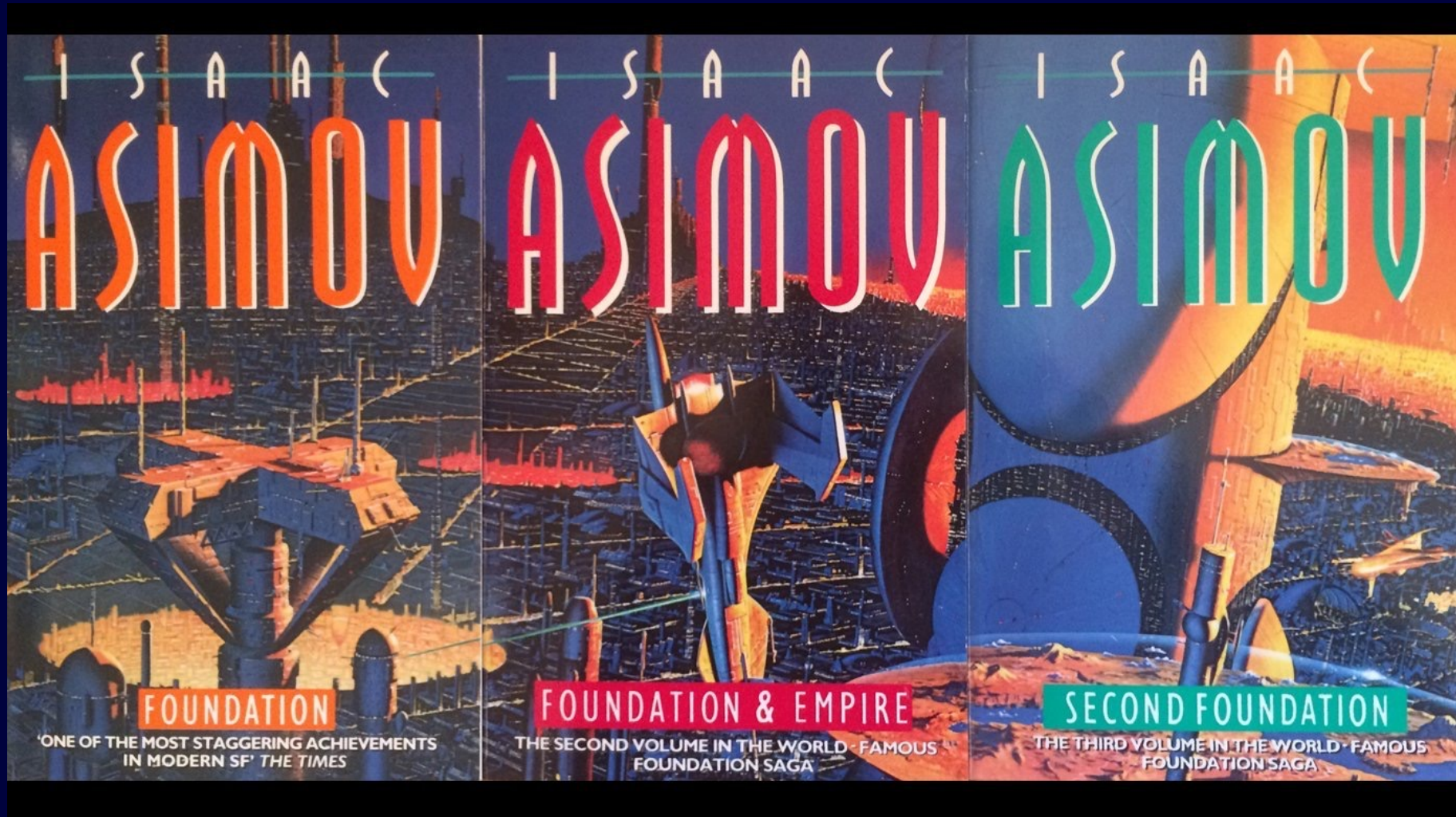


Local implementations

Rongcheng, China:



Social physics




Other problems: Security and privacy



india.com

Home > Viral > Aadhar Card data has been leaked online! Modi Government finally admits Aadha...

Aadhar Card Data Has Been Leaked Online! Modi Government Finally Admits Aadhaar Can Be Hacked


According to a Ministry of Electronics and Information Technology that has been leaked online, Aadhaar has been hacked, and the data of various Aadhar card holders has been leaked online.

 Published: March 31, 2017 6:12 PM IST

 By [Aishwarya Krishnan](#) 



Other problems: Security and privacy



rest of world
Reporting Global Tech Stories

SEARCH MENU

FEATURE

Inside India's booming dark data economy

Thanks to lax privacy laws and high consumer demand, details on everything from how you shop to who you date are all for sale.

By SNIGDHA POONAM and SAMARTH BANSAL
22 DECEMBER 2020

11111001



Other problems: Security and privacy

Unique Supply Base with 40MM+ Licensed Vehicles and 16 OEM Contracts

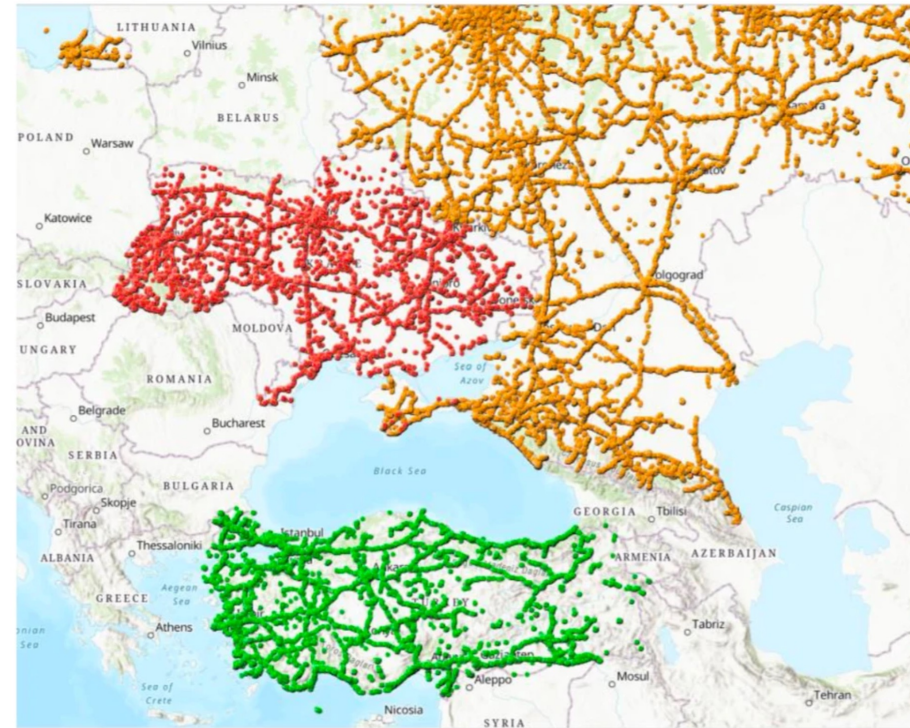
	BMW Group	Daimler	GM	FCA / PSA	Renault Nissan Mitsubishi
Geography	Global	EU	NA	EU, US & LatAm	EU, NA & JP
# of Vehicles Available	12MM				
Key Use Cases	Fleets, Mapping, Predictive Maintenance, Smart Cities	Intelligence			
# of Data Parameters	60+				

otonomo Source: Otonomo management. Select list of OEM customers.

A SECTION OF THE OTONOMO PRESEN

Ulysses' analysis, and existing access to bulk commercial telematics data, represents a revolutionary opportunity to collect and analyze real time data on mobile targets anywhere in the world without deploying into harms way – whether you want to geo-locate one vehicle or 25,000,000 as shown here. Currently, we can access over 15 billion vehicle locations around the world every month.

For more information contact



A SECTION OF THE DOCUMENT OBTAINED BY MOTHERBOARD. IMAGE: MOTHERBOARD



Other problems: Interacting algorithms

1. **Credit-reporting algorithms:** Access to private goods and services like cars, homes, and employment.
2. **Algorithms adopted by government agencies:** Affect access to public benefits like health care, unemployment, and child support services.

Who uses algorithm type 1? Consumer reporting agencies, including credit bureaus, tenant screening companies, or check verification services

Where do they get data from? A wide range of sources: public records, social media, web browsing, banking activity, app usage, and more.

What do they do with it? Assign people “worthiness” scores, which figure heavily into background checks performed by lenders, employers, landlords, even schools.



Other problems: Interacting algorithms

1. Cre

MIT
Technology
Review



DANIEL ZENDER

Tech policy / AI Ethics

The coming war on the hidden algorithms that trap people in poverty

A growing group of lawyers are uncovering, navigating, and challenging the automated systems that deny the poor housing, jobs, and basic services.

by **Karen Hao**

December 4, 2020

The Guardian

Newspaper of the year

Centrelink cancels 40,000 robodebts, new figures reveal

NEWS BBC

Post Office scandal: Postmasters have convictions quashed

🕒 11 December 2020

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re systems more prone to error.



Other problems: Interacting algorithms

1. **Credit-reporting algorithms:** Access to private goods and services like cars, homes, and employment.
2. **Information algorithms:** Direct your attention to particular news items.

Who creates algorithm type 2? Media services such as Facebook, LinkedIn, Tiktok, Twitter



Other problems: Misuse of data

Alex

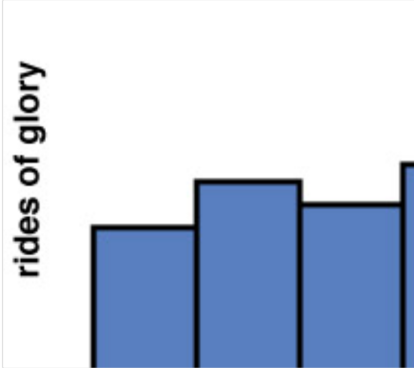
UBER

BLOG HOME CITY BLOGS SEARCH

#UBER

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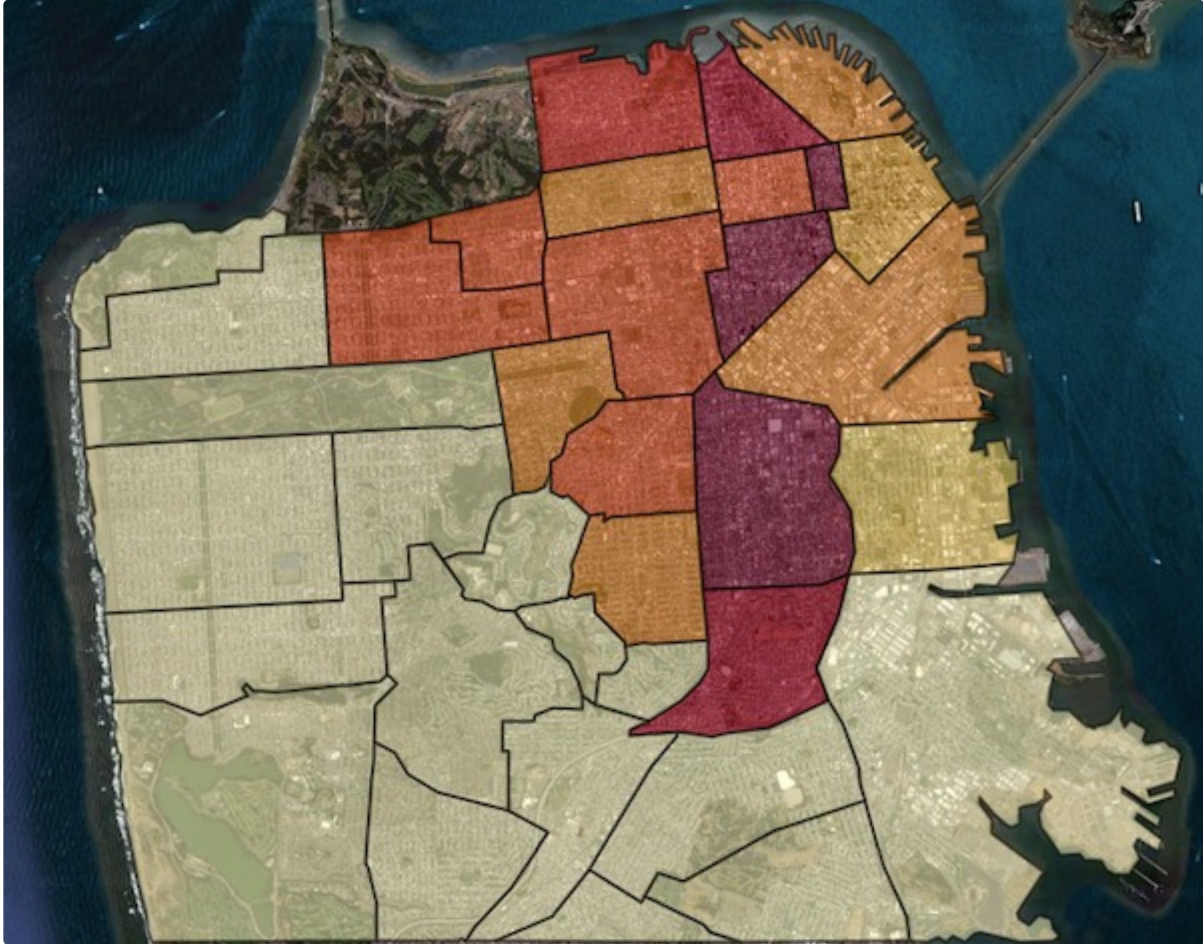
MARI POSTED



rides of glory

Today we're going to get a little emotional. You sometimes it's nice to think that you love us, to and we know that you sometimes look for love human beings, we [#UberData](#) nerds are cuddl

$\sqrt{\heartsuit} = ?$
 $\frac{d}{dx} \heartsuit = ?$
 $F\{\heartsuit\} = \frac{1}{\sqrt{x}}$
My nori is useless here.



San Francisco

One of the neat things we can do with our data is discover rider patterns: are there weekend riders that only use Uber post-party? What about the workday commuters who use us every


...entation that we came

...een 10pm and 4am on

...h of a mile of the

...sleep). (This time

...pattern.)



Seattle

being Rides

ork has

orkers and

Bostonians differ in more than just baseball.

hot tub
 torney
 Amazon
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**FOR THE LOVE OF LEARNING
SINCE 1597**



GRESHAM

COLLEGE