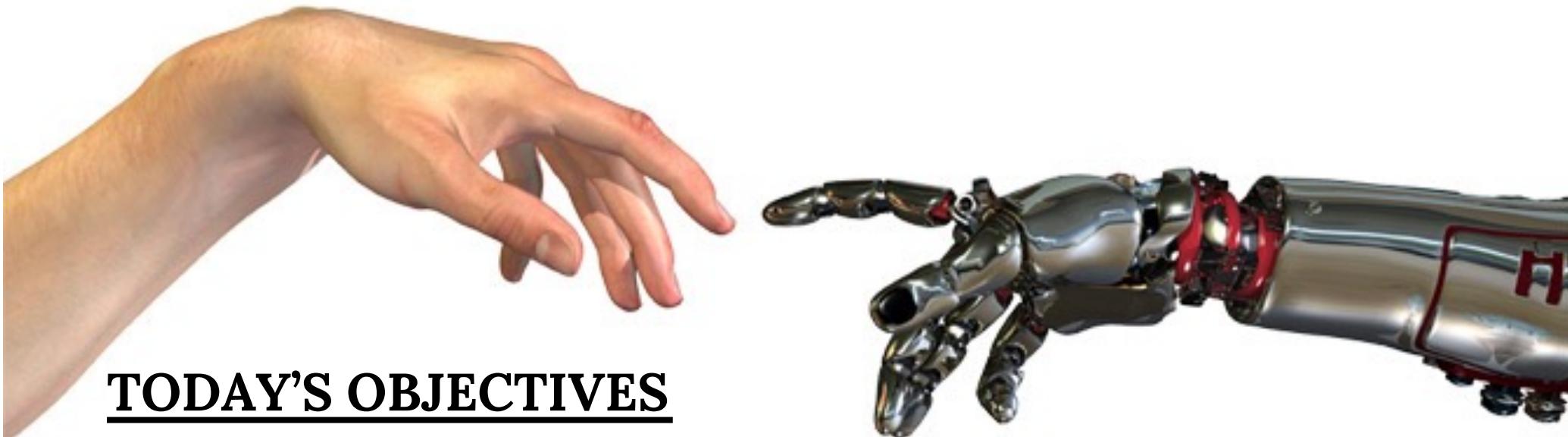


Human-Computer Interaction

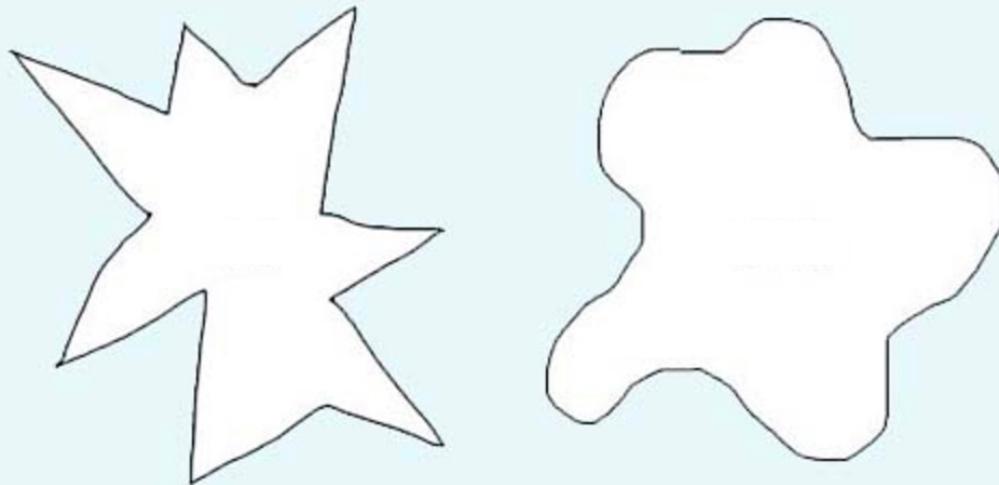
Cognitive Bias in HCI Design - Part II



TODAY'S OBJECTIVES

- 1.) Cognitive bias continued
- 2.) Use of Virtual Reality to “experience” bias, is it possible?

Assign names “KiKi” and “BuBu”. HATE vs LOVE?



Our response was a reflex. Through years of living on the planet, humans learned to associate pain with sharpness and safety with softness.

Our brains evolved to recognize sharpness and softness in many different forms. Now, we instinctively attribute soft-sounding words to round images, and harsh syllables with jagged shapes.

“This is the basis of metaphor, if I gave you the words ‘love’ and ‘hate’ you’d associate KiKi with hate, and BuBu with love.” - Lotto

Exercise - Mind Grooving, Your Mental Models

- When I say “color” what is the first word that comes to your head?
 - When I say “furniture” what word comes to your head?

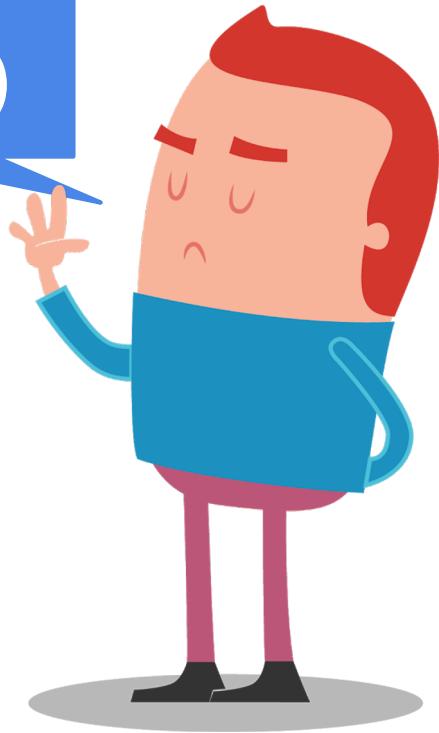


First Impressions...

<https://managingbias.fb.com/>

YOU are biased.

(So am I.)



But don't feel bad...

It matters.

+ Not all biases are bad

How the average American sees the World

A Stereotype Map



Mental shortcuts

- We rely on stereotypes
- Some are good
- Some are bad



**75% show preference
for white people over
Black people**

Even true for half of the black participants

Want to understand more about that study go here →
<https://www.pewsocialtrends.org/2015/08/19/exploring-racial-bias-among-biracial-and-single-race-adults-the-iat/>

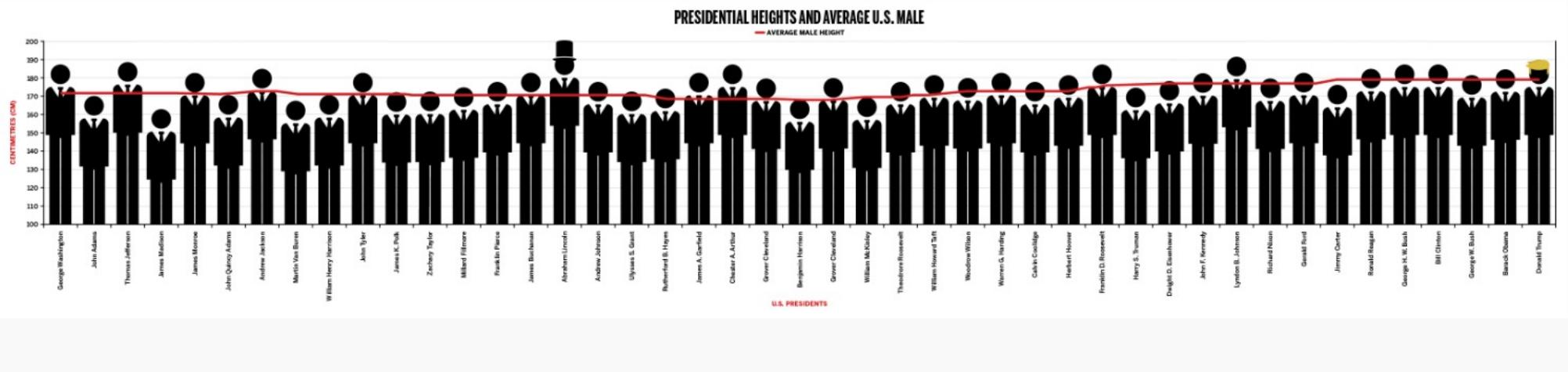
Height discrimination. Half of Fortune 500 Companies were polled. Companies tend to promote tall men people, into senior roles; in fact, the average male CEO is three inches taller than the average male. This is part of the reason why tall employees make anywhere between 9–15% more than their counterparts. Published in Journal of Applied Psychology.

In the U.S. population, about 14.5% of all men are six feet or over. Among CEOs of Fortune 500 companies, that number is 58%.

It also suggested that a person who is 6 feet tall is likely to earn \$166,000 more than someone who is 5 feet 5 inches tall, over a 30 year career.

<https://www.apa.org/monitor/julaug04/standing>

More on height bias



Of America's 45 presidents, only six have been of below-average height; the last one was Jimmy Carter, elected 40 years ago, and the shortest was James Madison, the country's fourth president, who clocked in at 5'4".

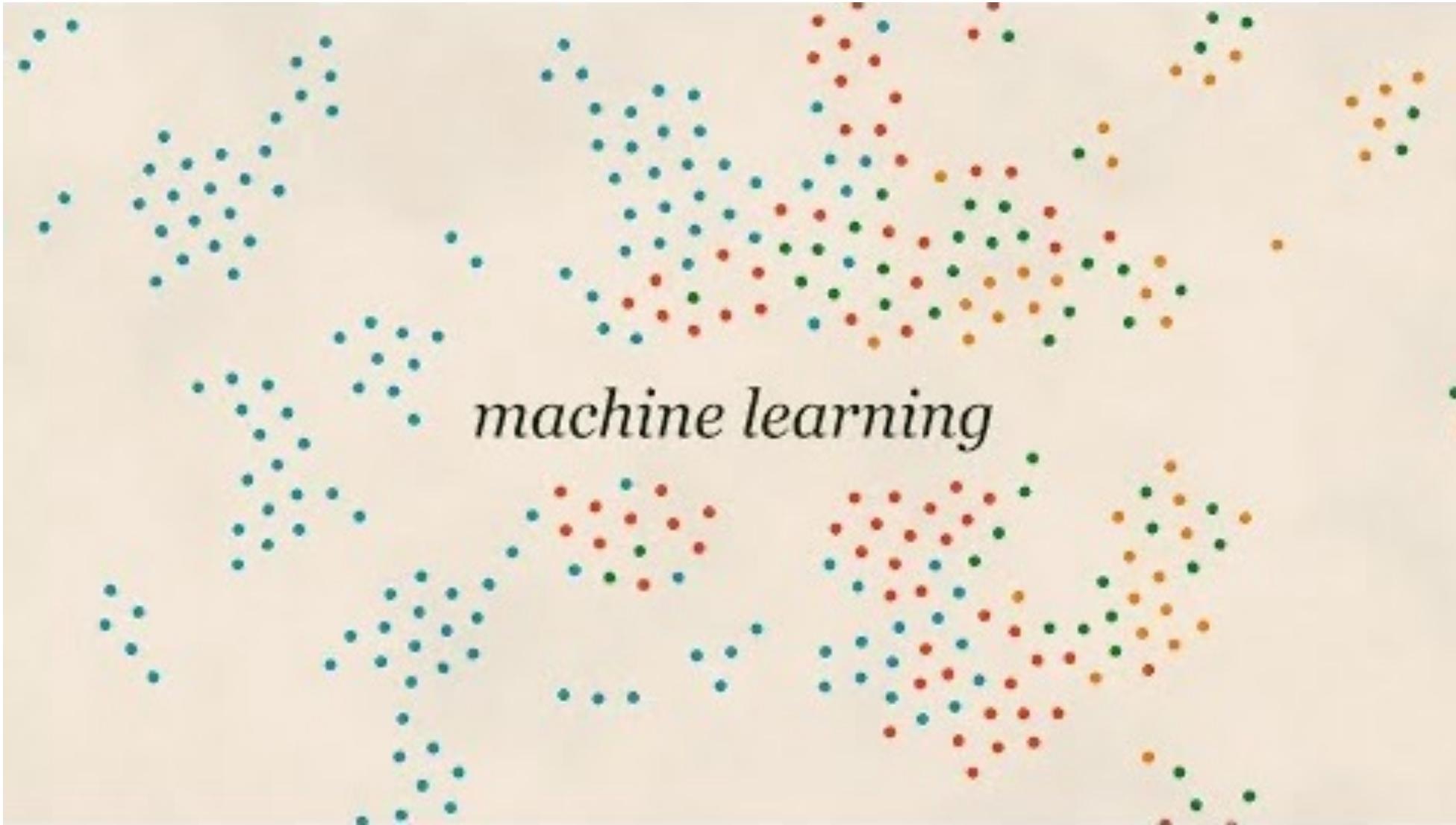
Average height of US men – 5'9"
Women – 5'4"

Centers for Disease Control and Prevention (CDC). [Anthropometric Reference Data for Children and Adults: United States, 2007-2010](http://www.cdc.gov/nchs/data/nhanes/nhanes_07-10/presidential_heights.pdf). Vital and Health Statistics. 2012; 11(252):1-48.

A composite image featuring two close-up portraits of men. On the left is a Black man with short, dark hair and a neutral expression. On the right is a White man with short, light-colored hair and a similar neutral expression. The background is dark and moody for both subjects.

Bias in AI

<https://www.propublica.org/article/machine-bias-risk-assessments-in-criminal-sentencing>



machine learning

Significant gender gap in venture-funded startups....

A recent study showed that:

The screenshot shows a news article from Bloomberg's Newsroom. The header includes the Columbia Business School logo and a search bar. The main title is "Why Aren't Startups Founded by Women Getting More Funding?". Below the title, there's a sub-headline "Full Coverage of Global Markets Following the Fed's Emergency Rate Cut". The article is categorized under "Technology". The main headline reads "The Gender Gap in VC Funding Is Even Worse for These Women". It is written by Rebecca Greenfield and published on June 18, 2019, at 8:00 AM MDT. The article summary includes two bullet points: "Female businesses that cater to women get most of the funding" and "'Deep-tech' startups face more bias and sexism, study finds'". To the right, there's a "Most Read" section and a "MARKETS Stocks Extend Decline After Powell" update.

Why Aren't Startups Founded by Women Getting More Funding?

Full Coverage of Global Markets Following the Fed's Emergency Rate Cut

Technology

The Gender Gap in VC Funding Is Even Worse for These Women

By [Rebecca Greenfield](#)
June 18, 2019, 8:00 AM MDT

- Female businesses that cater to women get most of the funding
- "Deep-tech" startups face more bias and sexism, study finds

Most Read

MARKETS
Stocks Extend Decline After Powell

Diversity is a competitive advantage.

Diverse teams outperform homogeneous ones, especially when solving complex problems.

Is Emily more employable than Lakisha?

Applicant: Brendan, Greg, Emily & Anne



Applicant: Tamika, Aisha, Rasheed, & Tyrone



Source: [Are Emily and Greg More Employable than Lakisha and Jamal? A Field Experiment on Labor Market Discrimination](#),
[Marianne Bertrand and Sendhil Mullainathan](#).



Palantir, a software startup, is paying [\\$1.7 million](#) to settle a racial discrimination lawsuit with the Department of Labor's Office of Federal Contract Compliance Programs (OFCCP).

The Department of Labor accused Palantir of disproportionately eliminating qualified Asian applicants for engineering positions. The lawsuit alleges Asian applicants were routinely eliminated in the [resume screening](#) and telephone interview phases despite being as qualified as white applicants.

Research has found that resumes with English-sounding names receive requests for interviews 40% more often than identical resumes with Chinese, Indian, or Pakistani names.

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3:12

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TECHNOLOGY

Cornell Professor Ifeoma Ajunwa Discusses Artificial Intelligence Used In Hiring

April 8, 2019 · 5:24 PM ET

Heard on [All Things Considered](#)**FORTUNE**

RANKINGS ▾

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Stores are designating shopping times for coronavirus vulnerable seniors

LIFESTYLE

The Coronavirus Economy: How my job as a member of the Philadelphia Orchestra changed

NEWSLETTERS

Should the government increase surveillance to help fight the coronavirus?

FINANCE

Boeing stock plunges again after coronavirus bailout quest spooks investors

Microsoft Calls for Laws to Prevent Bias in Facial Recognition AI

Microsoft thinks current facial recognition technology increases the risk of biased outcomes, can lead to nefarious intrusions into privacy and can encroach on democratic freedoms if used for mass government surveillance.

MPW • AMAZON

Amazon Reportedly Killed an AI Recruitment System Because It Couldn't Stop the Tool from Discriminating Against Women

BY DAVID MEYER

October 10, 2018 4:00 AM EST

<https://www.npr.org/2019/04/08/711169802/cornell-professor-ifeoma-ajunwa-discusses-artificial-intelligence-used-in-hiring>



USING AI TO APPLY FOR JOBS

Avg Rating



Strong
Includes
Framework



https://www.youtube.com/watch?v=JmF-SUiMWV4&feature=emb_logo

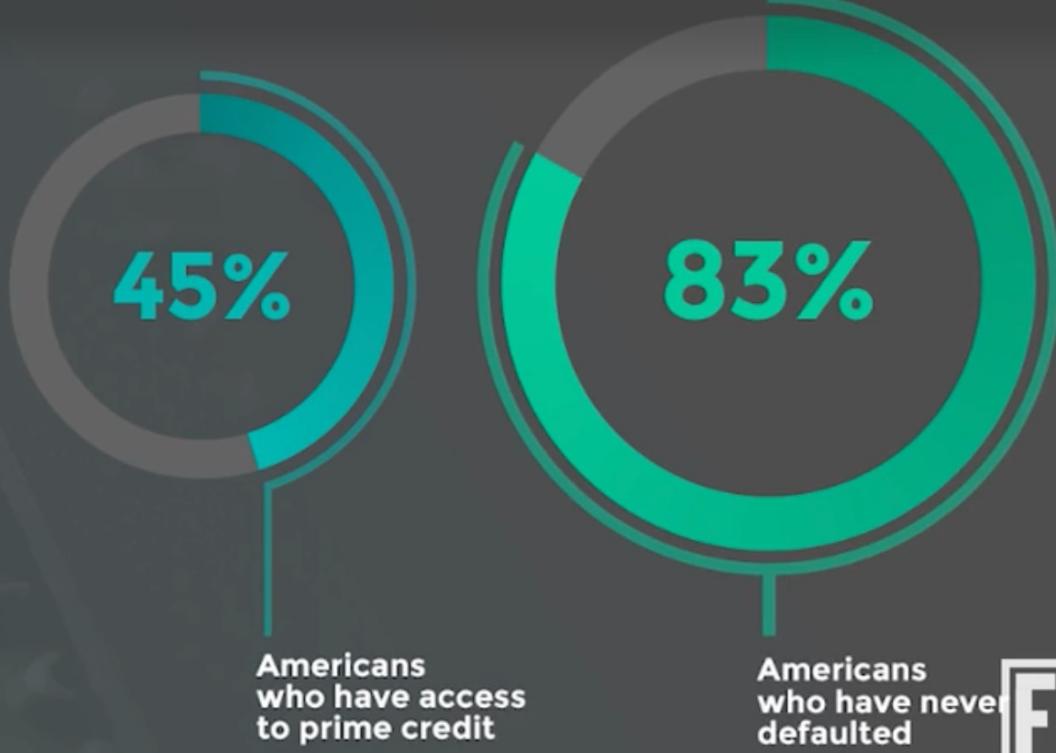
Artificial Intelligence Has A Bias Problem

These companies are working to find a solution.

More than four in five Americans

have never defaulted on a loan, yet less than half have access to prime credit.³

The implication is eye-opening: with a smarter credit model, lenders could approve almost twice as many borrowers, with fewer defaults.



WWW.UPSTART.COM

◀ Share

<https://www.visagetechnologies.com/HTML5/latest/Samples>ShowcaseDemo>ShowcaseDemo.html>

What does Valence mean in psychology?

Valence, or hedonic tone, is the affective quality referring to the intrinsic attractiveness/"good"-ness (positive **valence**) or averseness/"bad"-ness (negative **valence**) of an event, object, or situation. The term also characterizes and categorizes specific emotions.

en.wikipedia.org › wiki › Valence_(psychology)

[Valence \(psychology\) - Wikipedia](#)

:) Affectiva

WHAT HOW WHO BUZZ AUTO AI CAREERS EMOTION AI SUMMIT

Twitter LinkedIn Facebook Instagram

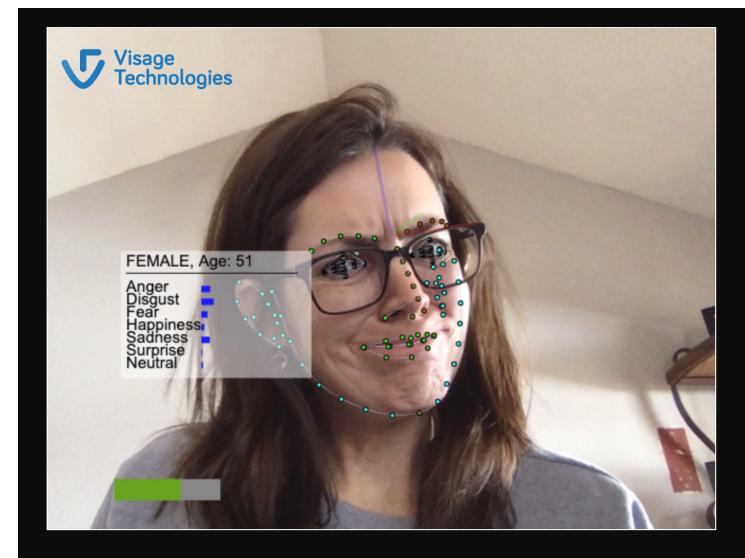
<https://www.affectiva.com/experience-it/>

The screenshot shows a video player with a man sitting on a chair next to a goat, holding a sign that says "Goat 4 Sale". Below the video is a line graph showing emotional data over time, with multiple colored lines representing different emotions. To the left of the video player is a sidebar with buttons for various emotions: Expressiveness, Attention, Brow Furrow, Brow Raise, Disgust, Inner Brow Raise, Lip Corner Depress, and Smile.

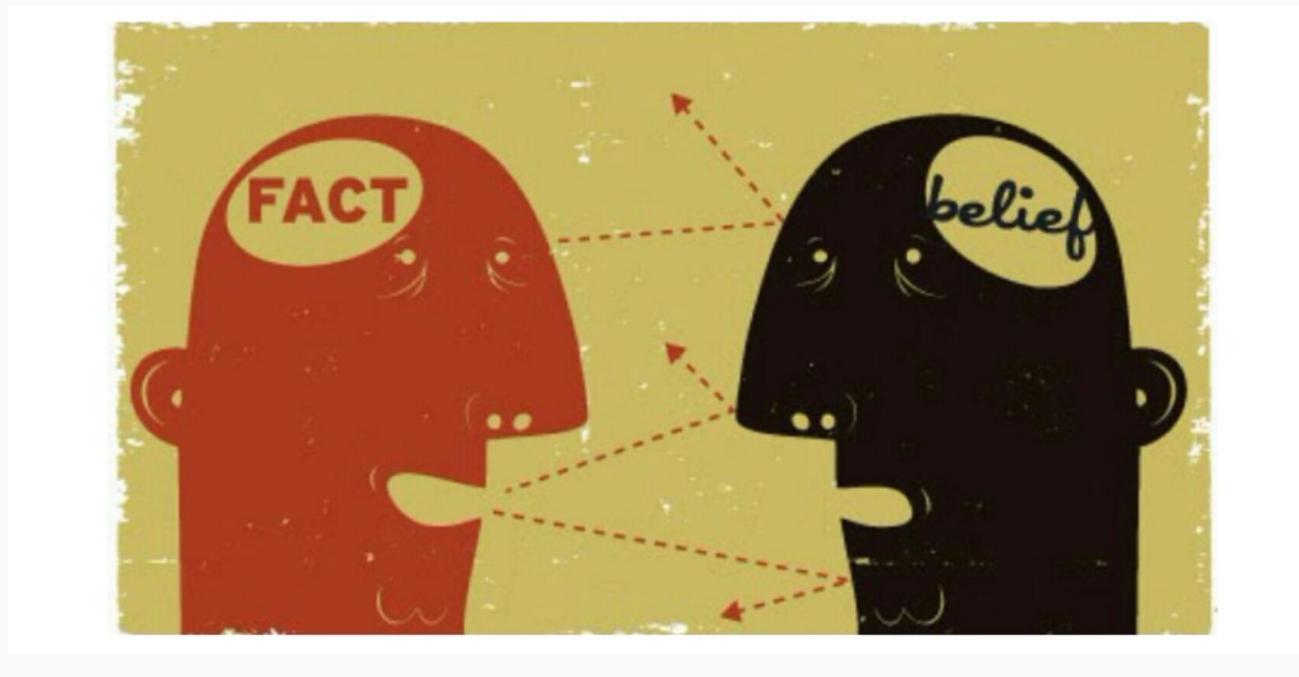
Demo our market research tool for online media testing

<https://itunes.apple.com/us/app/affdexme/id971529011?mt=8>

Try AffdexMe for iOS to see a demo on your iPhone



How can we stop bias?



I am biased, we all are and that's OK, BUT...

Slow down and make measured decisions (data, structure questions)

Speak up when you see biased behaviors and designs ...

Reducing bias in HCI design....

- Stop, slow down + realize you're most likely not "right" in what the solution should be right @ the start?

Ask **someone outside of yourself or someone "like you"** -- aka diversify your team

- **User Involvement** - A design project should start with a thorough requirement analysis of the intended users, using direct methods such as interviews, observation and focus groups. Performance metrics, etc.

However, user involvement does not automatically assure bias-free design.

Can we "experience" bias intentionally to gain greater awareness?



*VR has many application areas beyond
gaming (as hopefully you can now see 😊)*

...

Use of Virtual Reality to Experience Bias/Gain Awareness:

- Race
- Inclusion
- Gender
- Power
- Dynamics
- Disabilities
- LGTBQ

Equal Reality's VR experiences allow clients to "walk a mile in someone else's shoes" to learn what it is like to experience discrimination or inappropriate behavior, identify bias, and practice making decisions in real time to rehearse how they would react should they witness discrimination.



Equal Reality

MOTIVATING ACTION

BRINGING FEELING BACK INTO BANKING

Testing the efficacy of VR to increase know-how, promote personal accountability, and create behavior change at one of the world's leading banks.

Problem

Addressing a \$1 Billion settlement, a world leading bank set out on a mission to empower employees to take personal responsibility, to question, and to act when they see something that doesn't seem right.

Solution

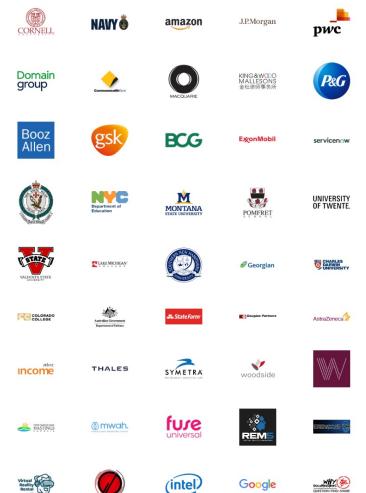
VR training simulation based on a real lived experience of an employee, allowing you to make value-based decisions and practice taking action in the moment.

The Result

ACTION - 96% felt prepared to act if they were to see this behavior in the workplace.

KNOW-HOW - Over 99% understand the reporting options available to them.

CUSTOMERS
OVER 45 WORLD LEADERS USING OUR SOLUTIONS

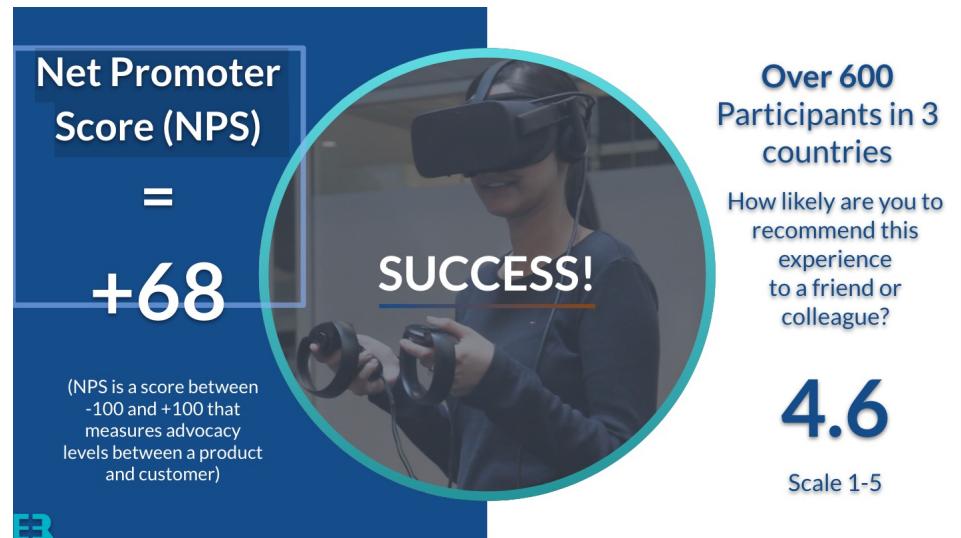


Pilot Results

J.P.Morgan  Equal Reality

A collaboration between J.P. Morgan and Equal Reality for APAC Diversity and Inclusion month

Measures of “effectiveness”, an interesting case study....



The NPS Calculation

Calculate your NPS using the answer to a key question, using a 0-10 scale: How likely is it that you would recommend [brand] to a friend or colleague?

Respondents are grouped as follows:

- **Promoters** (score 9-10) are loyal enthusiasts who will keep buying and refer others, fueling growth.
- **Passives** (score 7-8) are satisfied but unenthusiastic customers who are vulnerable to competitive offerings.
- **Detractors** (score 0-6) are unhappy customers who can damage your brand and impede growth through negative word-of-mouth.

Subtracting the percentage of Detractors from the percentage of Promoters yields the Net Promoter Score, which can range from a low of -100 (if every customer is a Detractor) to a high of 100 (if every customer is a Promoter).

What Is Net Promoter?

A TRUSTED ANCHOR FOR YOUR CUSTOMER EXPERIENCE MANAGEMENT PROGRAM

Net Promoter Score®, or NPS®, measures customer experience and predicts business growth. This proven metric transformed the business world and now provides the core measurement for customer experience management programs the world round.



Calculating Your Net Promoter Score

It's simple to calculate your final NPS score – just subtract the percentage of Detractors from the percentage of Promoters.

For example, if 10% of respondents are Detractors, 20% are Passives and 70% are Promoters, your NPS score would be 70-10 = **60**.



$$\text{Smiley Face \%} - \text{Frowny Face \%} = \text{NPS®}$$

In practice...

- <https://www.qualtrics.com/customer-experience/nps-software/>

The screenshot shows the Qualtrics website with the following details:

- Header:** qualtrics.^{XM}, PRODUCTS ▾, SOLUTIONS ▾, COMPANY ▾, CUSTOMERS ▾, RESOURCES ▾, REQUEST DEMO.
- Breadcrumbs:** Platform > Customer Experience > Net Promoter Score (NPS)
- Section Title:** NET PROMOTER SCORE (NPS) SOFTWARE
- Main Content:** **Measure, analyze and improve NPS across your organization**. Below this is a "REQUEST A DEMO" button.
- Image:** A composite image showing a smartphone displaying the NPS survey interface and a laptop screen showing a similar survey interface with a woman's legs in the background.
- Survey Interface (Smartphone View):**
 - Question: How likely is it you would recommend PER to a friend or colleague?
 - Scale from 0 to 10, with 7 highlighted.
 - Text input field: What are the primary reasons you gave us that score?
 - Text: The experience was great. Love shopping with the products in the store. Couldn't have been a bad time.
- Survey Interface (Laptop View):**
 - Question: How likely is it you would recommend PER to a friend or colleague?
 - Scale from 0 to 10, with 7 highlighted.
 - Text input field: What are the primary reasons you gave us that score?
 - Text: The experience was great. Love shopping with the products in the store. Couldn't have been a bad time.

The Net Promoter Score Question

This is the core question that we mentioned earlier which will be the primary way you measure your score. The other questions mentioned are used to make the data easier to analyze and follow up with the respondent to address their feedback.

On a scale from 0-10, how likely are you to recommend Qualtrics to a friend or colleague?

Not at all likely Extremely likely

0 1 2 3 4 5 6 7 8 9 10

→

Reason For Your Score?

In this open text question, you ask the customer what their primary reason for giving the numerical score in the previous question. This will help you discover the drivers for promoters and detractors in your responses. Going through the open text feedback can be a time-consuming process, so consider using a text analysis tool like [Text iQ](#). If you are fielding more than a few dozen responses in your distribution a text analysis tool will save you a lot of time.

What are the primary reasons for the score you gave us?

Awesome product with so many capabilities

→

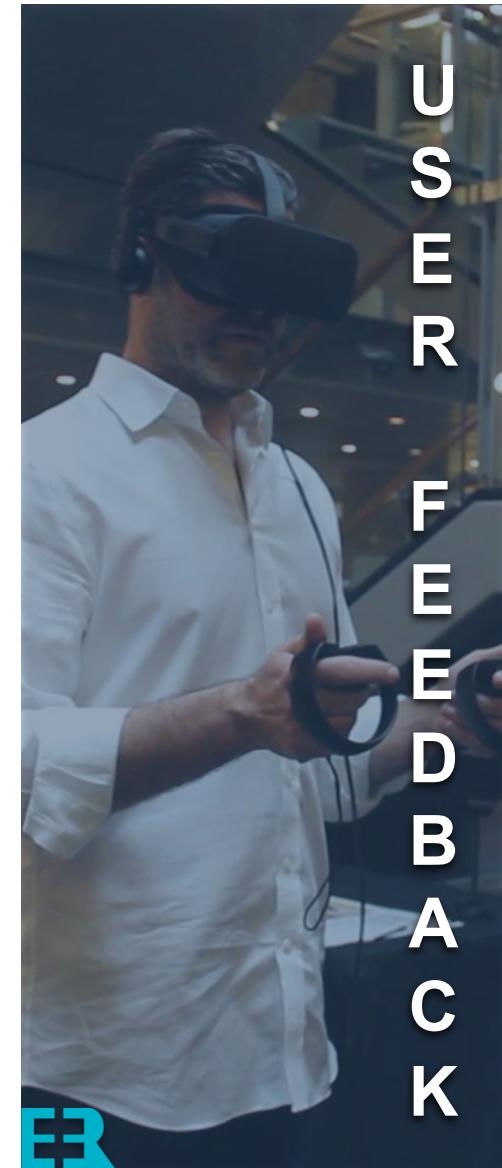
How Can We Make Your Experience Better?

In this question, you ask the respondent to suggest what you can do to improve their experience. This can be helpful if you are planning to do [close loop](#)

POSITIVE FEEDBACK

BREAKDOWN

QUESTION	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Net Positive
EMPATHY	50.00%	45.45%	4.04%	0.51%	0.00%	95.45%
IMMERSION	42.71%	47.24%	8.54%	1.51%	0.00%	89.95%
ACTION	43.72%	51.26%	5.03%	0.00%	0.00%	94.97%
KNOW-HOW	70.56%	26.40%	2.54%	0.51%	0.00%	96.95%
ENGAGEMENT	48.98%	38.78%	12.24%	0.00%	0.00%	87.76%



It was great! Very interesting experiences and looking forward to more VR experiences.

8 May - Hong Kong

This offers a better way to help people empathize with unconscious bias than traditional learning.

07 May - Australia

Great demonstration of how technology can help facilitate interactive learning and taking it up several levels!

28 May - Singapore

Great experience, very effective learning experience in just a 3 minute virtual encounter.

8 May - Hong Kong

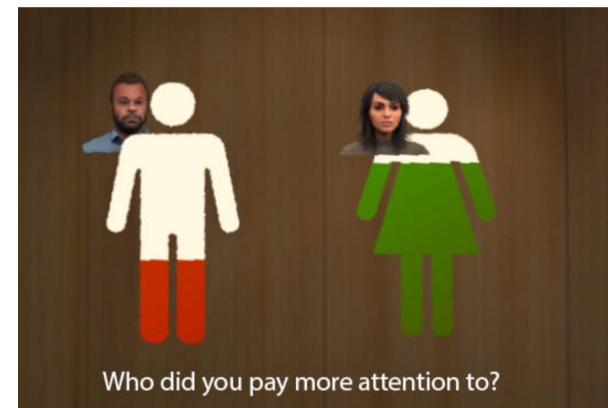
Equal Reality

CONSCIOUS DATA

Volunteering information by pulling the trigger when you feel uncomfortable or recognise unconscious bias.



UNCONSCIOUS DATA

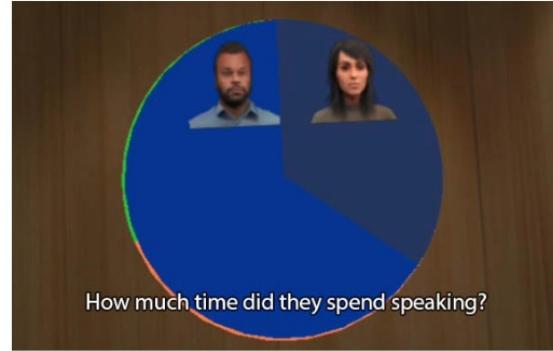


your own unconscious behavior, through your body language in social interactions



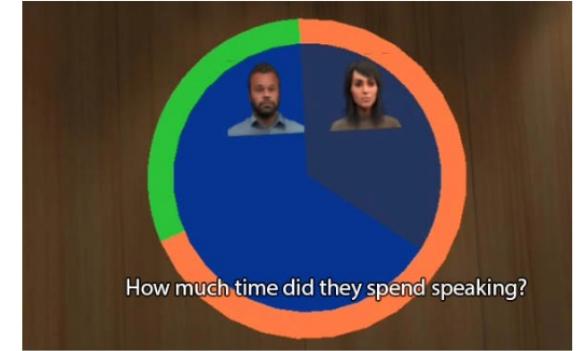
Your body language

How much time did you spend looking at each character?



Reality

How long were they speaking?



Compare

Compare how much time you spent looking at each character, compared to how long they actually spent speaking.

"Did you realize you gave 32.8% of your attention to Freddy, whole spoke 67.2% of the conversation?"

Virtual Reality & Ethics-

What if you could still see a loved one even after they were gone? Do you think this goes too far?



The screenshot shows a news article from VRTimes.com. The header reads "Korean Mother Reunites with Deceased Daughter in Virtual Reality". Below the headline is a photo of a woman wearing a VR headset and holding a controller, interacting with a virtual girl in a park. The article discusses the use of VR to help a mother grieve her deceased daughter.

"You all know she lost her daughter very suddenly right? Like in a month because of a blood disease. She wasn't forced or coerced to do this. She wanted to because she felt like she didn't get a chance to say goodbye and that it would help her find closure. Near the end of the full video she actually does say goodbye to her daughter, like she wanted to. What might not help you may help others that shouldn't have to be pointed out. Just because someone wants closure in a strange way doesn't mean it's wrong."