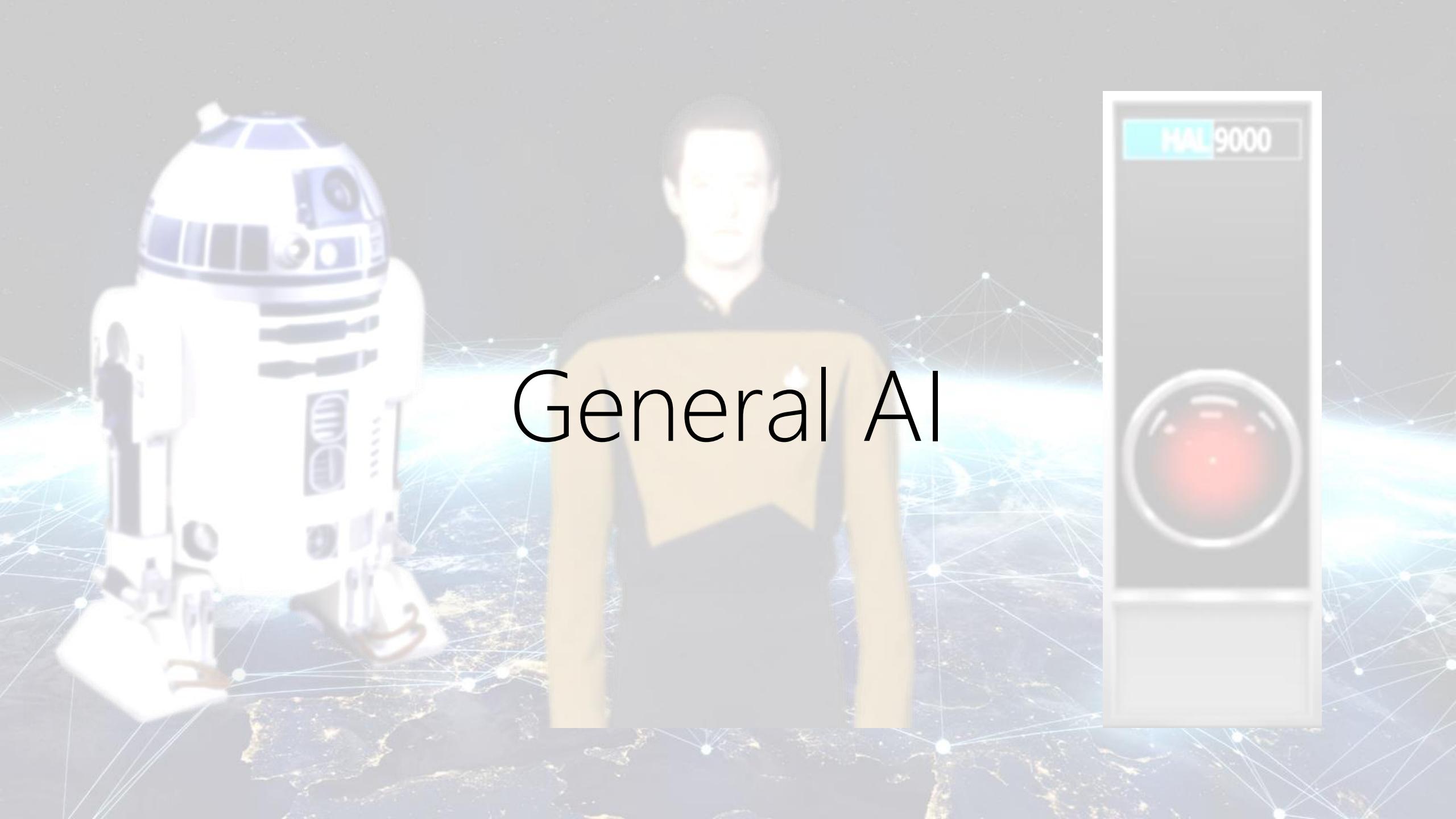


Artificial Intelligence: The Future of Software

@MatthewRenze
#prdc18wpg



General AI



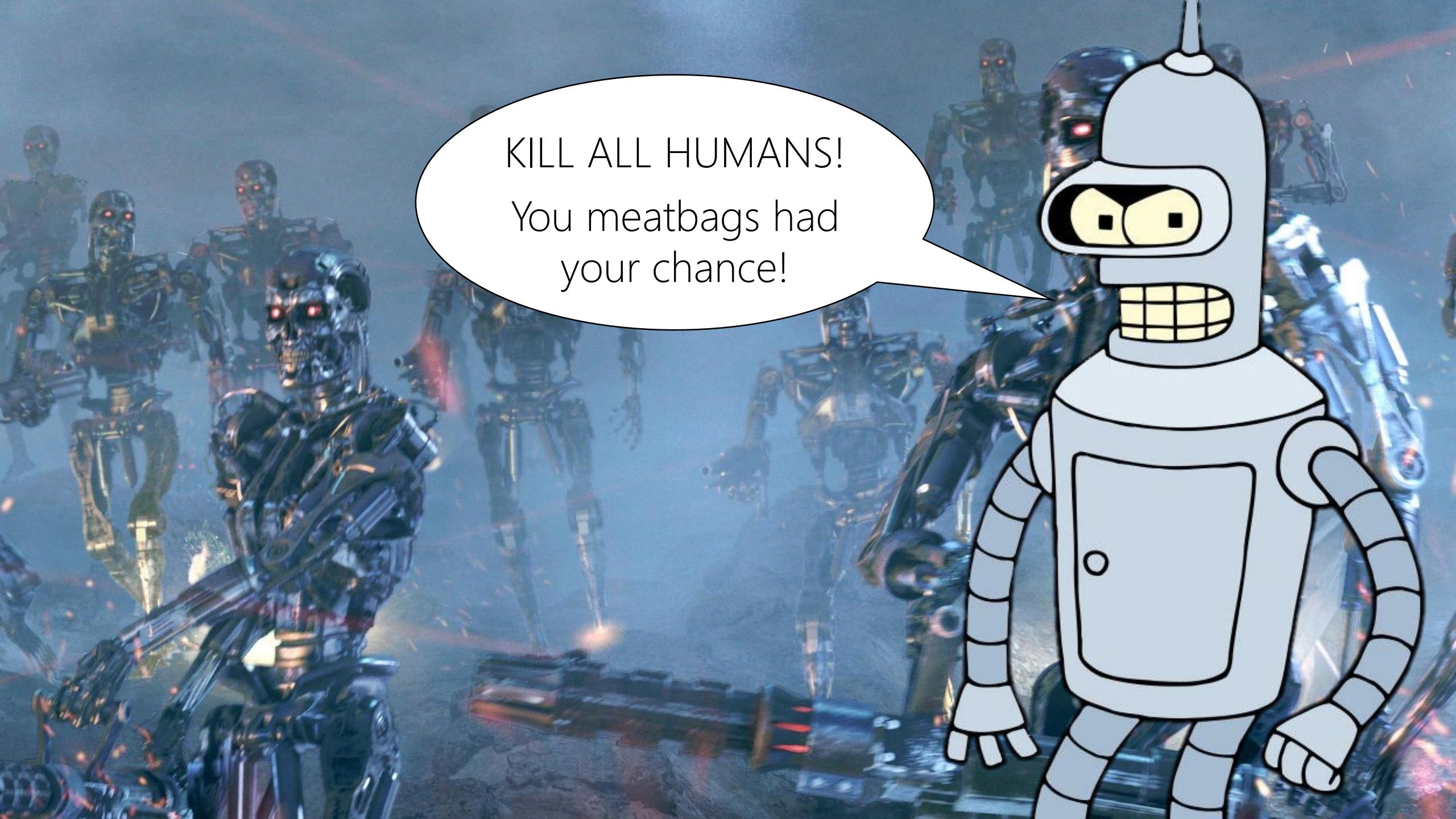


Source: IBM, Amazon, Google



Narrow AI

Source: IBM, Amazon, Google

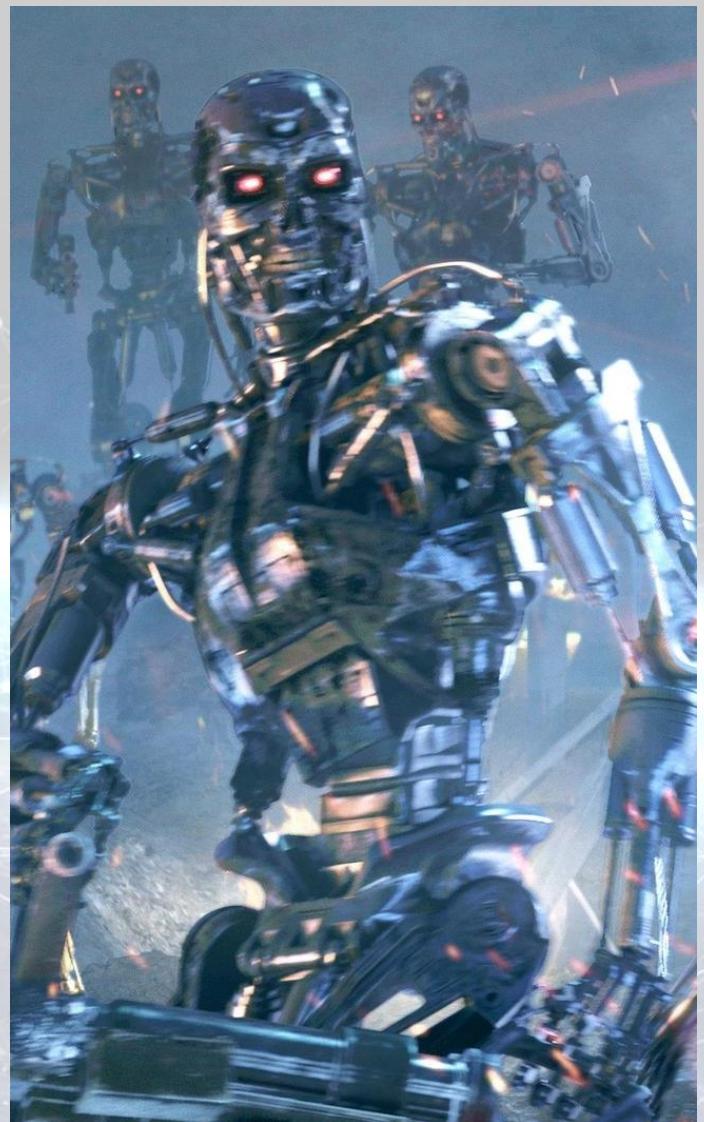


KILL ALL HUMANS!
You meatbags had
your chance!



A dense crowd of Terminators in a smoky, apocalyptic setting.

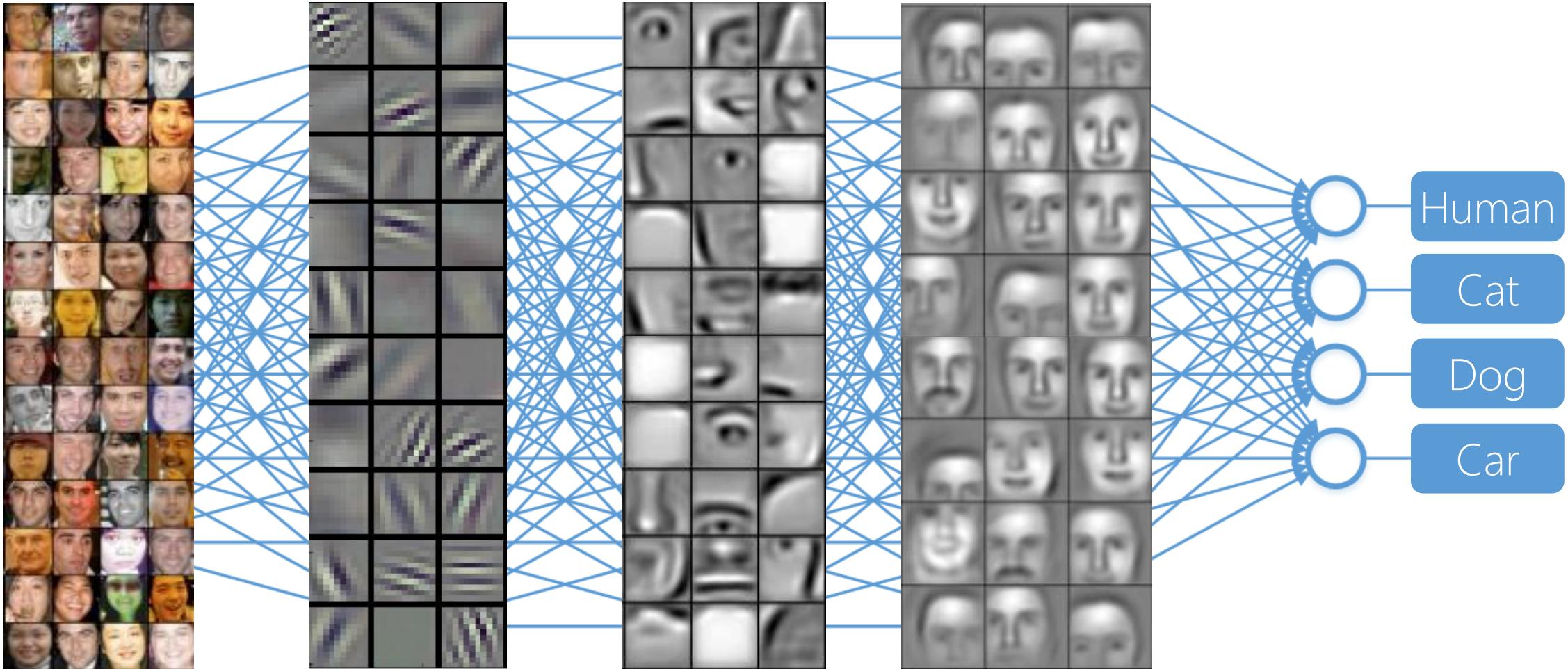
Crazy-Killer-Robot AI



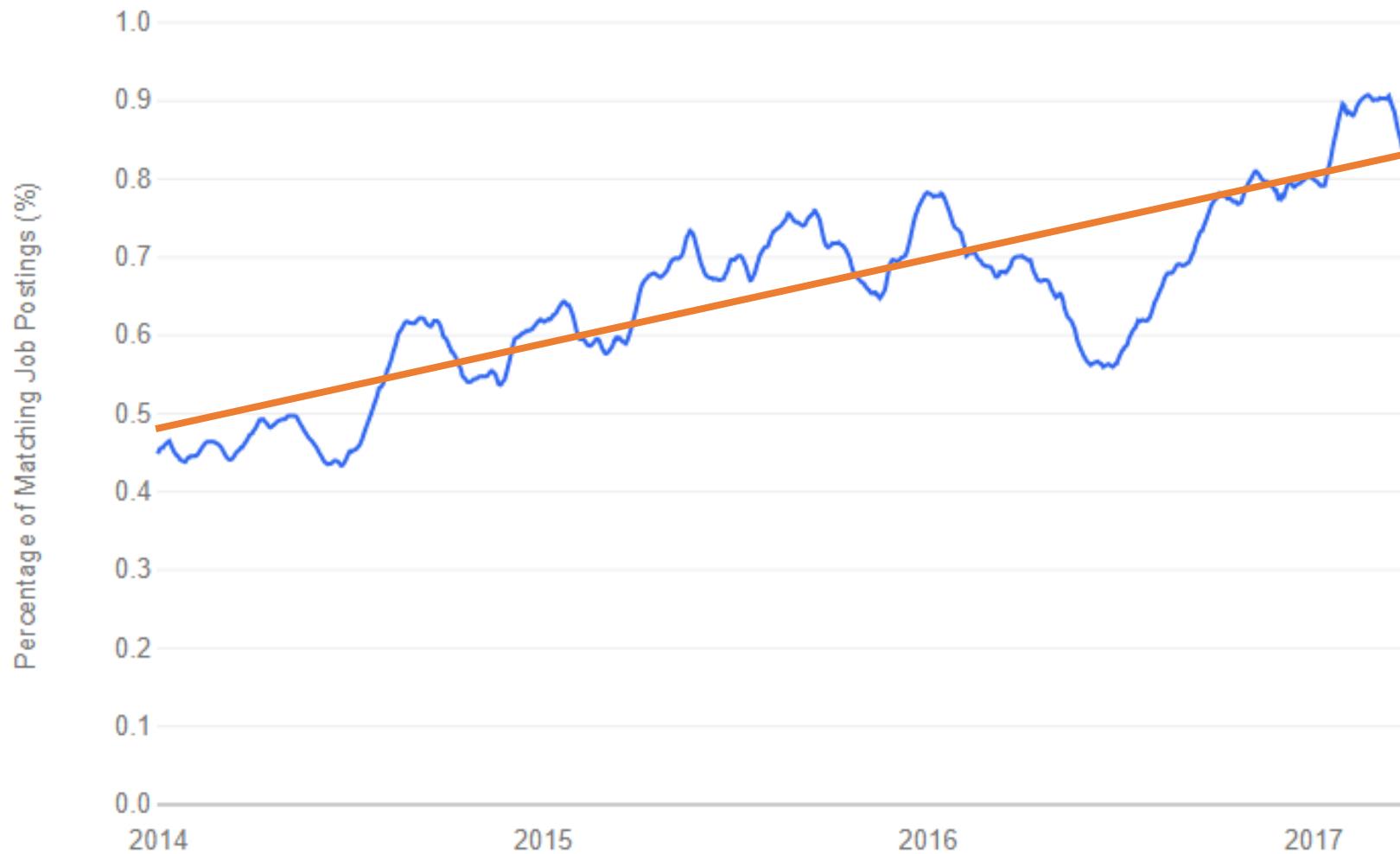






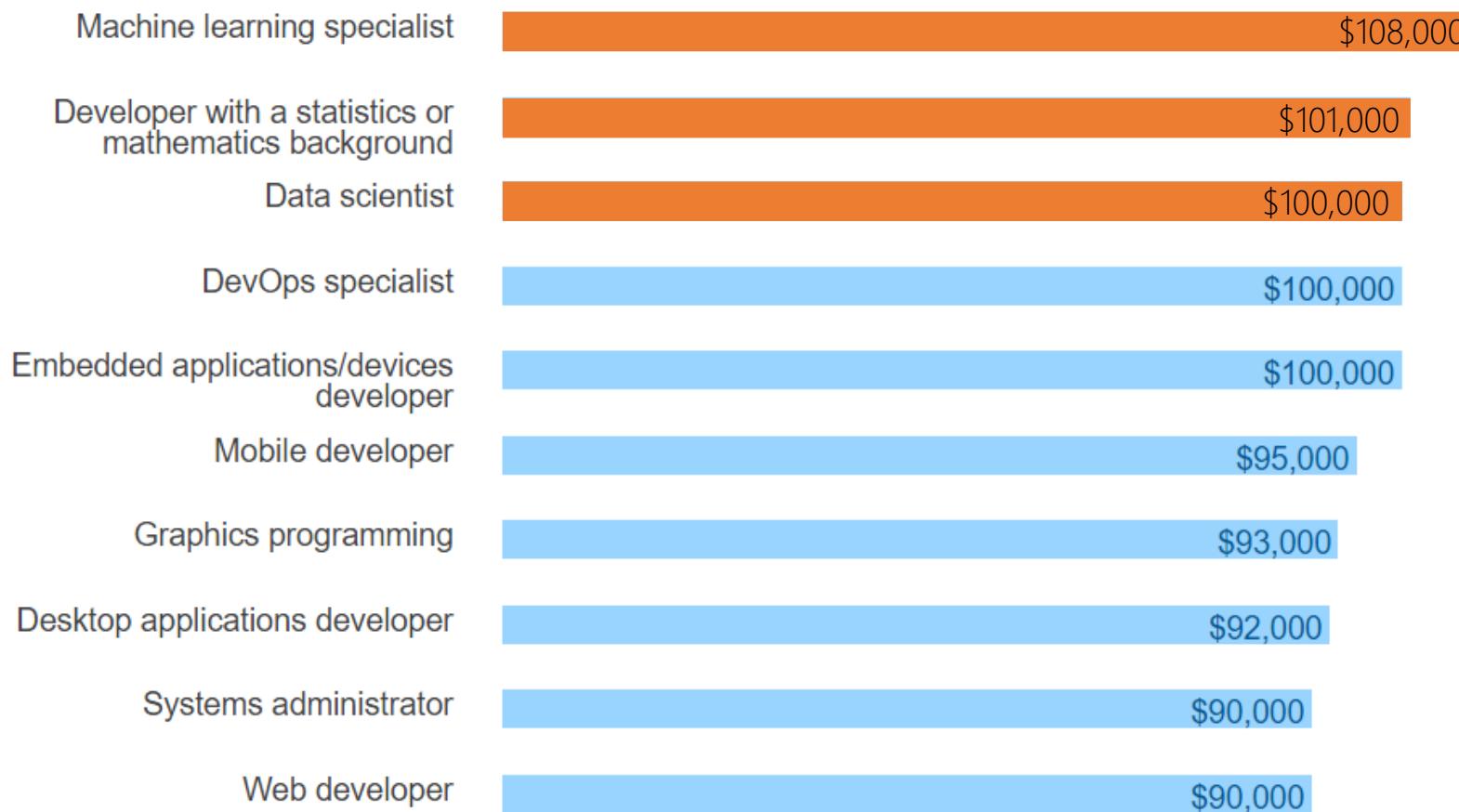


Job Postings for Machine Learning



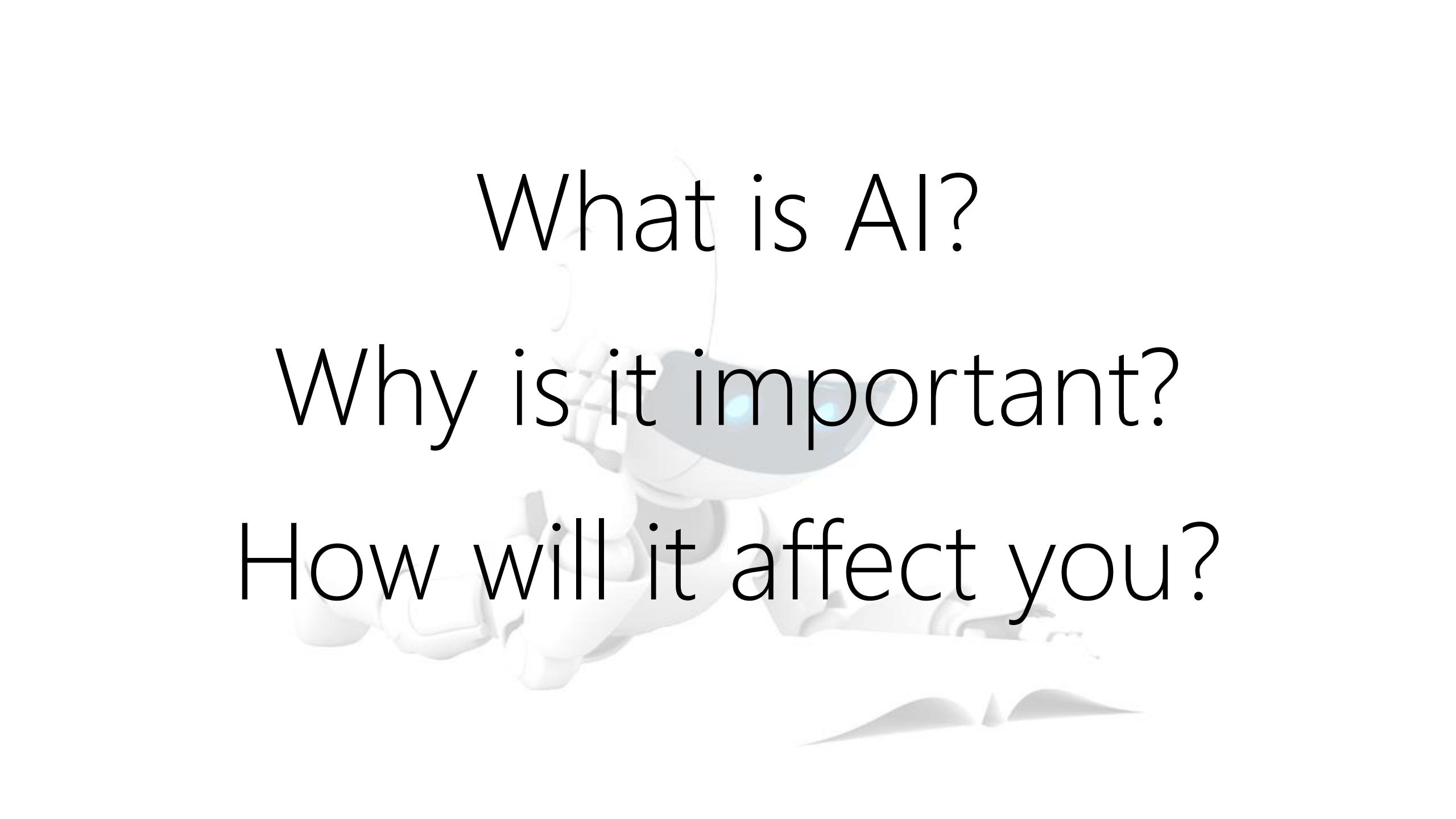
Source: Indeed.com

Average Salary by Job Type (USA)



Source: Stack Overflow 2017

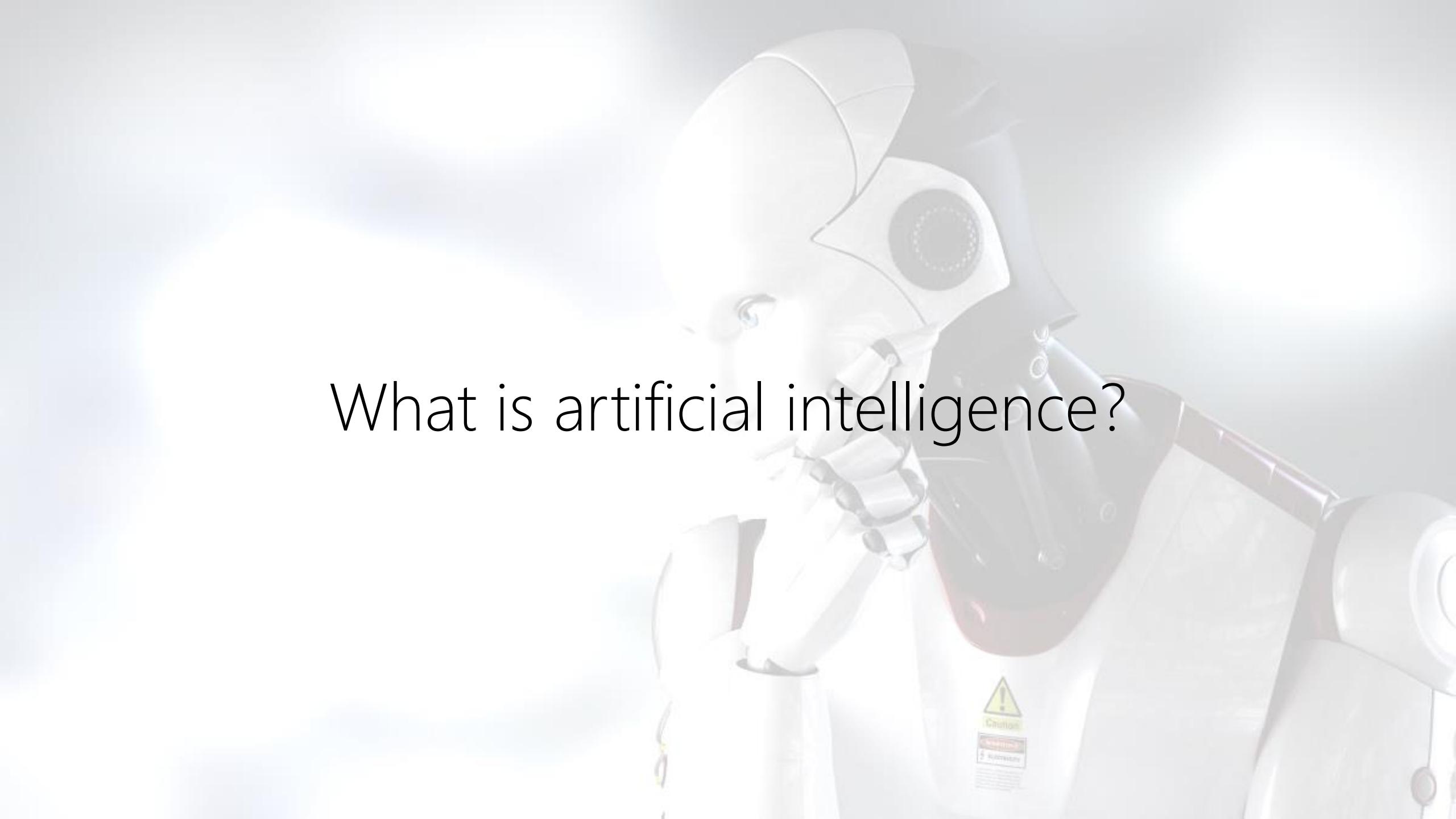




What is AI?

Why is it important?

How will it affect you?

A white humanoid robot with a red arm and a warning label.

What is artificial intelligence?



HUMAN
BRAIN

WIN

ELECTRONIC
BRAIN

'BERTIE
BRAIN'
by
Rogers Majestic



CHOOSE Rogers Majestic for LASTING SATISFACTION

Rogers Majestic
Tele & Television
Radio & Electronics

ROGERS MAJESTIC
SILVER JUBILEE

Designed Engineered and built in Canada's

1965
ROGERS





Source: Evan Amos



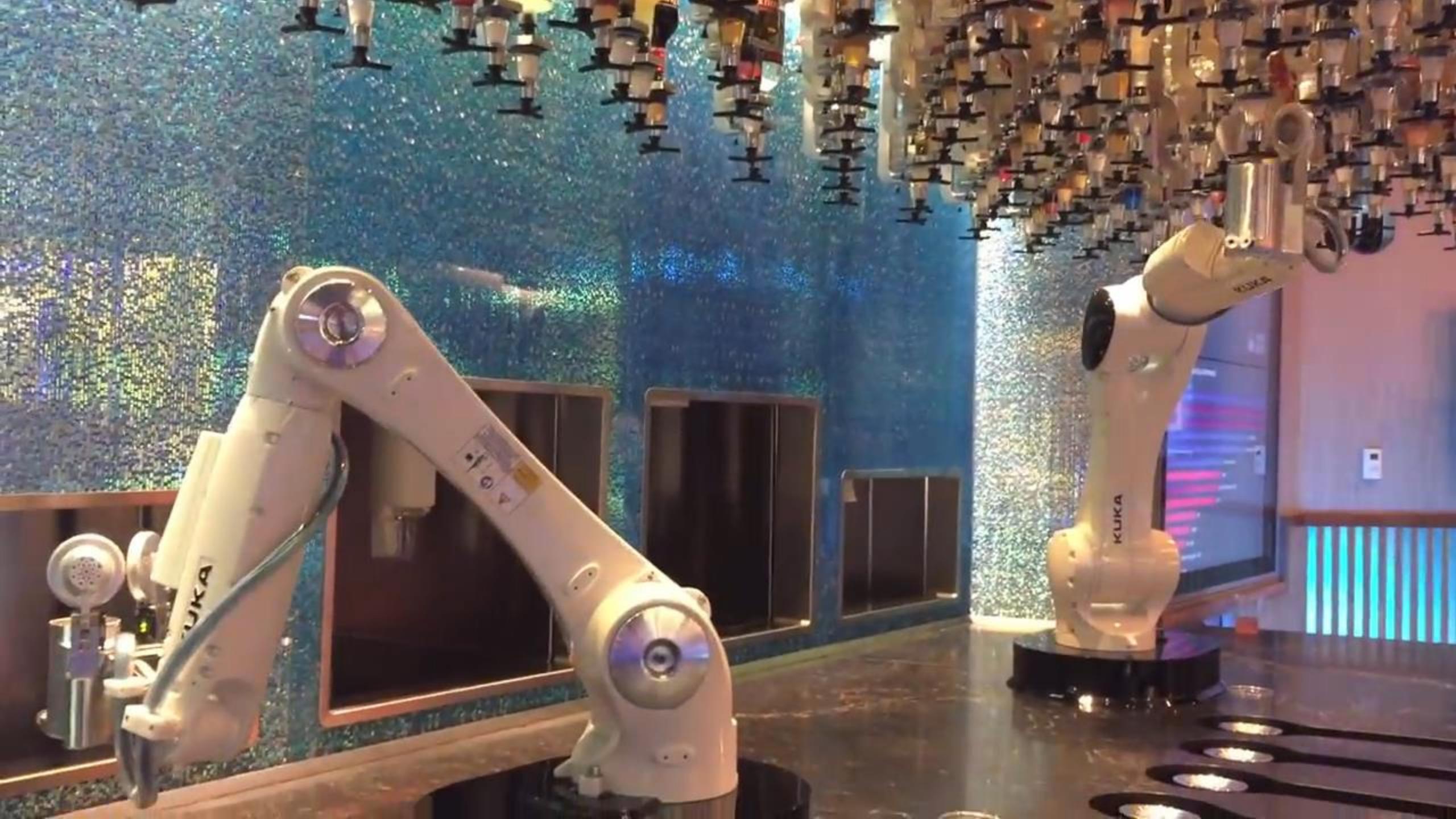


A dark, blurry silhouette of a person standing in a field of tall grass under a cloudy sky.

AI Winter
1970s – 2000s

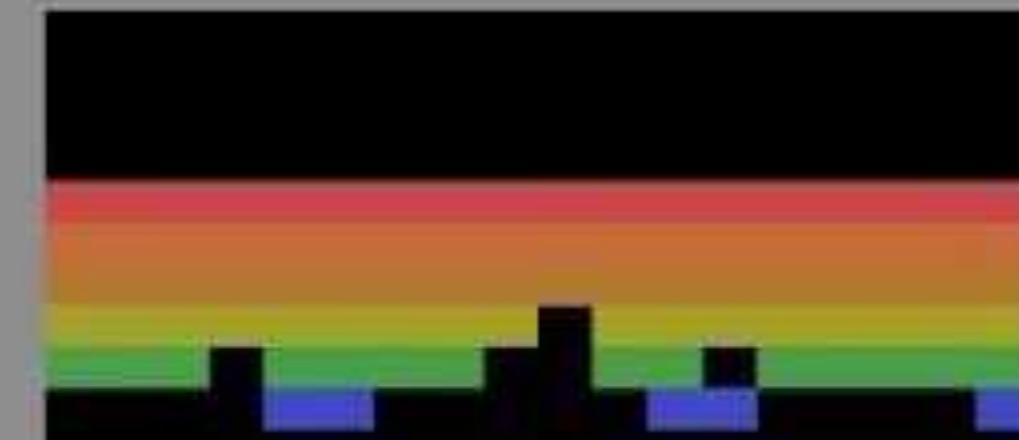


Source: Takashi Hososhima

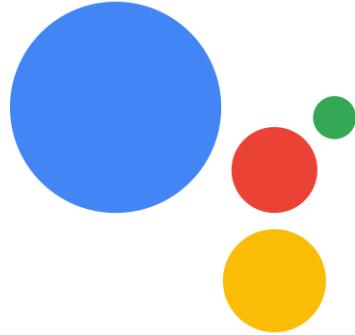




021 3 1



100 Training Episodes



Hi, how can I help?

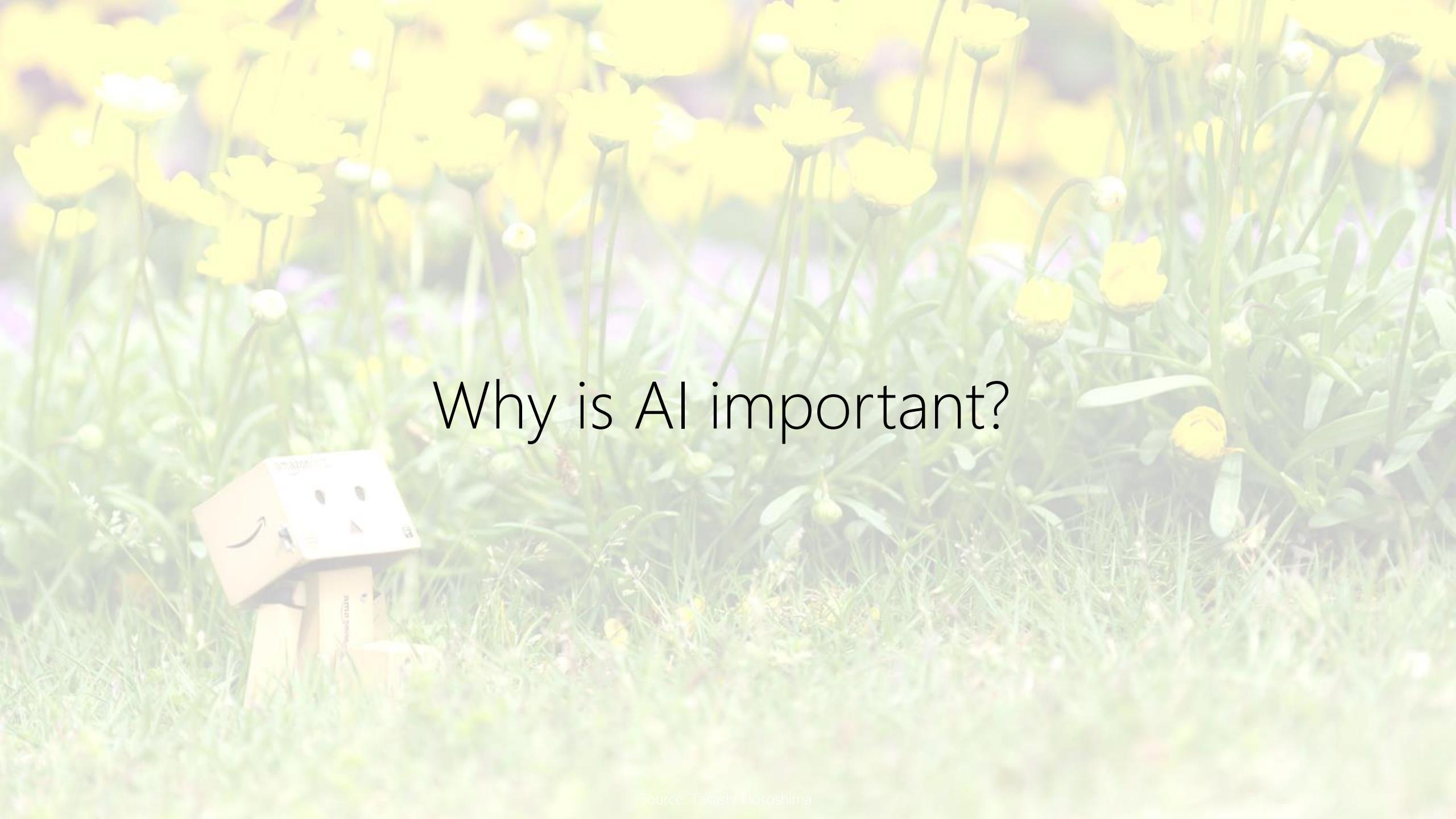
Make me a haircut appointment on Tuesday
anytime between 10 and 12.

No problem. I'll make you an appointment
and update you soon.

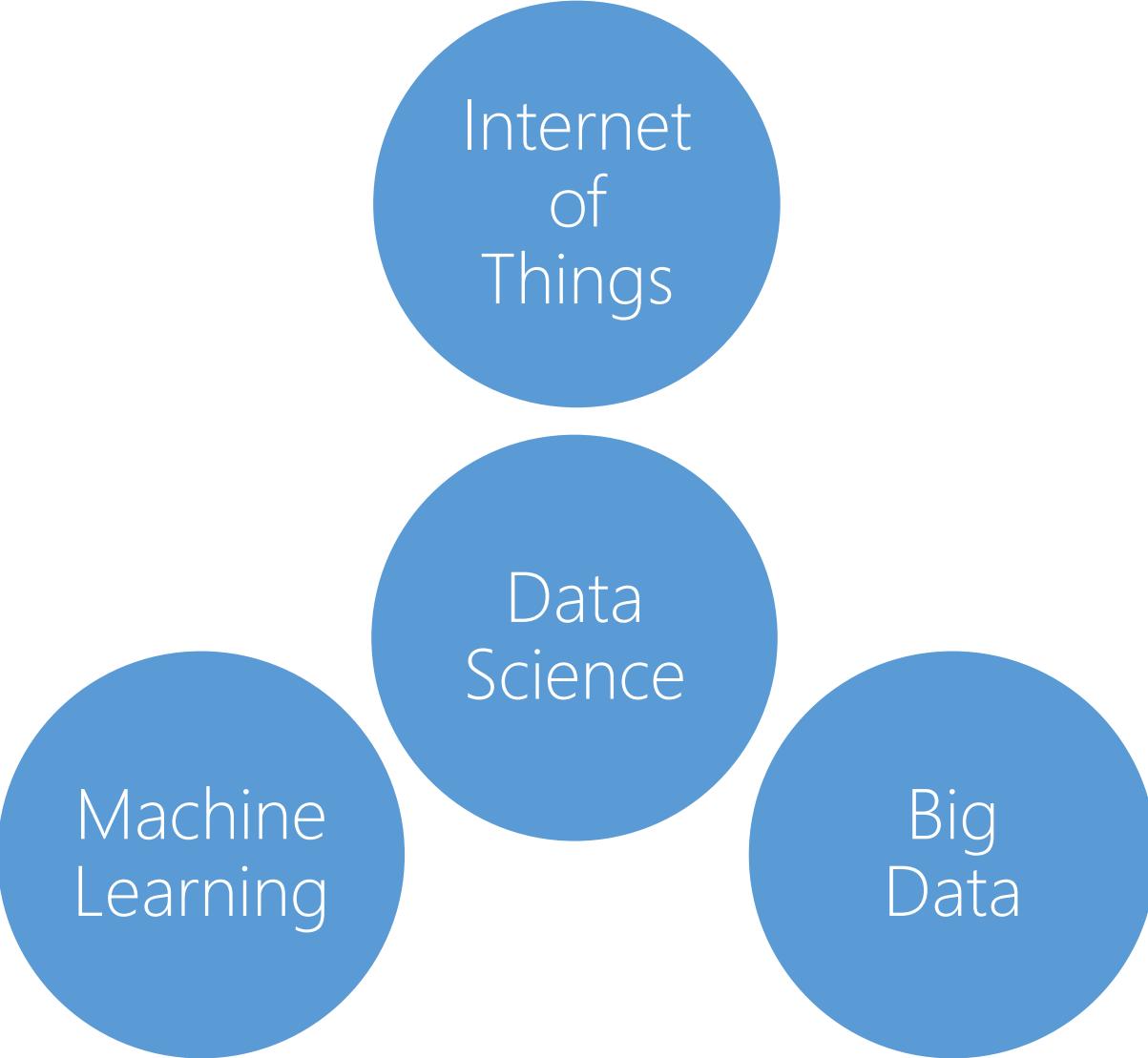
GOOGLE

Mashable



A photograph of a field of yellow flowers, likely buttercups, with green grass in the foreground. A small Amazon delivery box is visible in the lower-left corner.

Why is AI important?

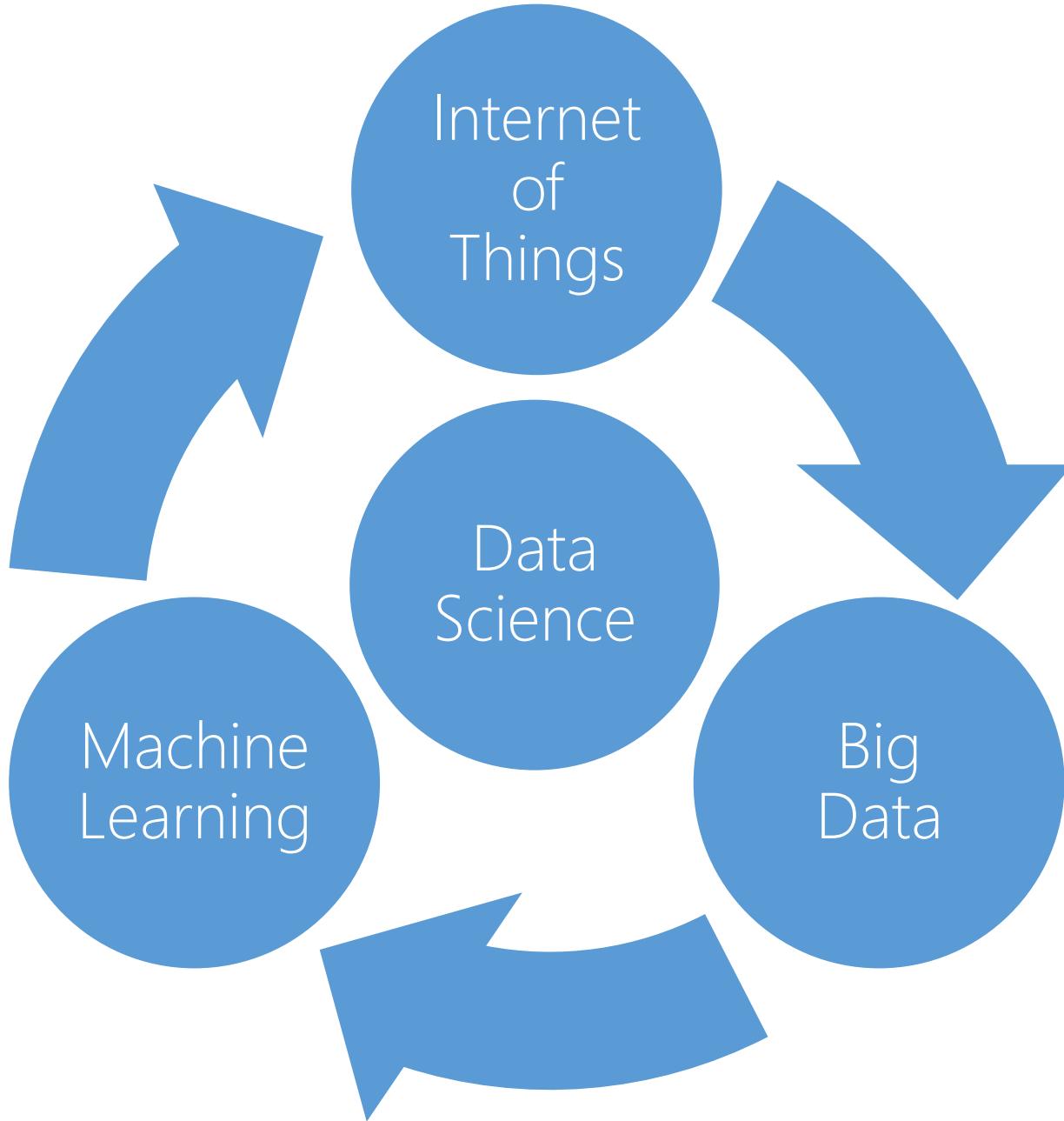


Internet
of
Things

Data
Science

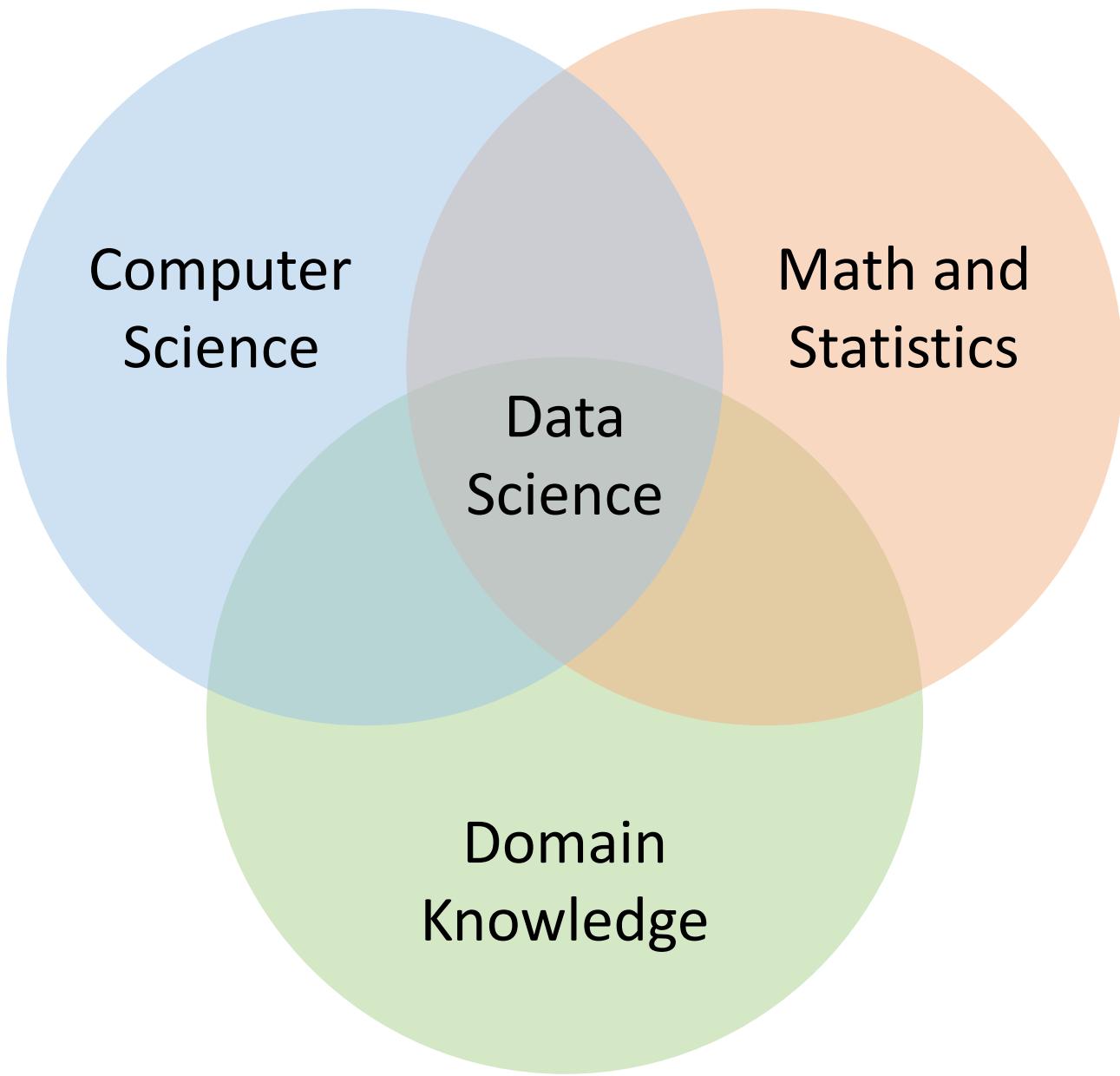
Machine
Learning

Big
Data





Data Science



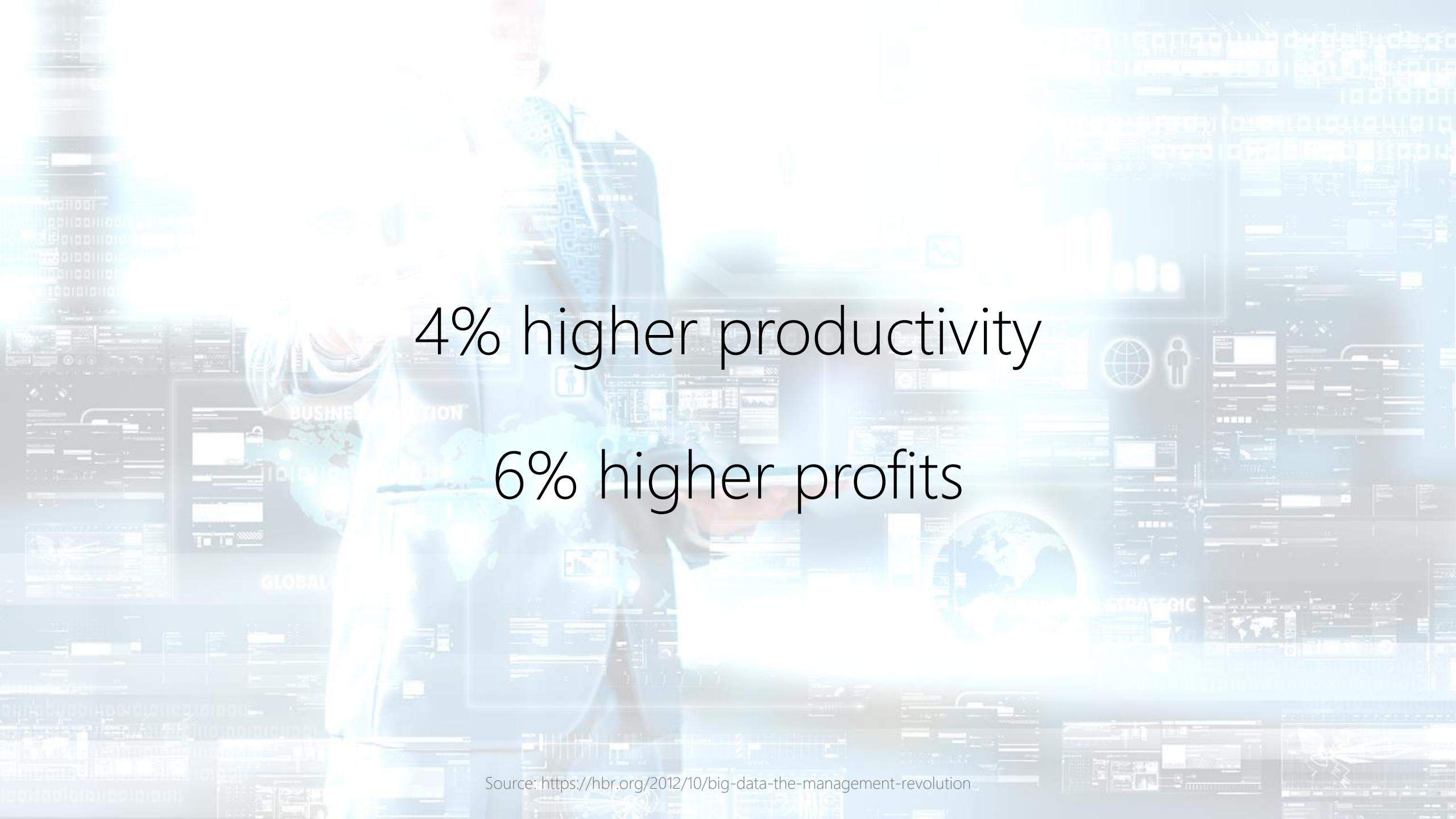
Job Postings for Data Scientists



Source: Indeed.com







4% higher productivity

6% higher profits















Family life



Medical



Hospital



Residence



Car



Factory



Travel







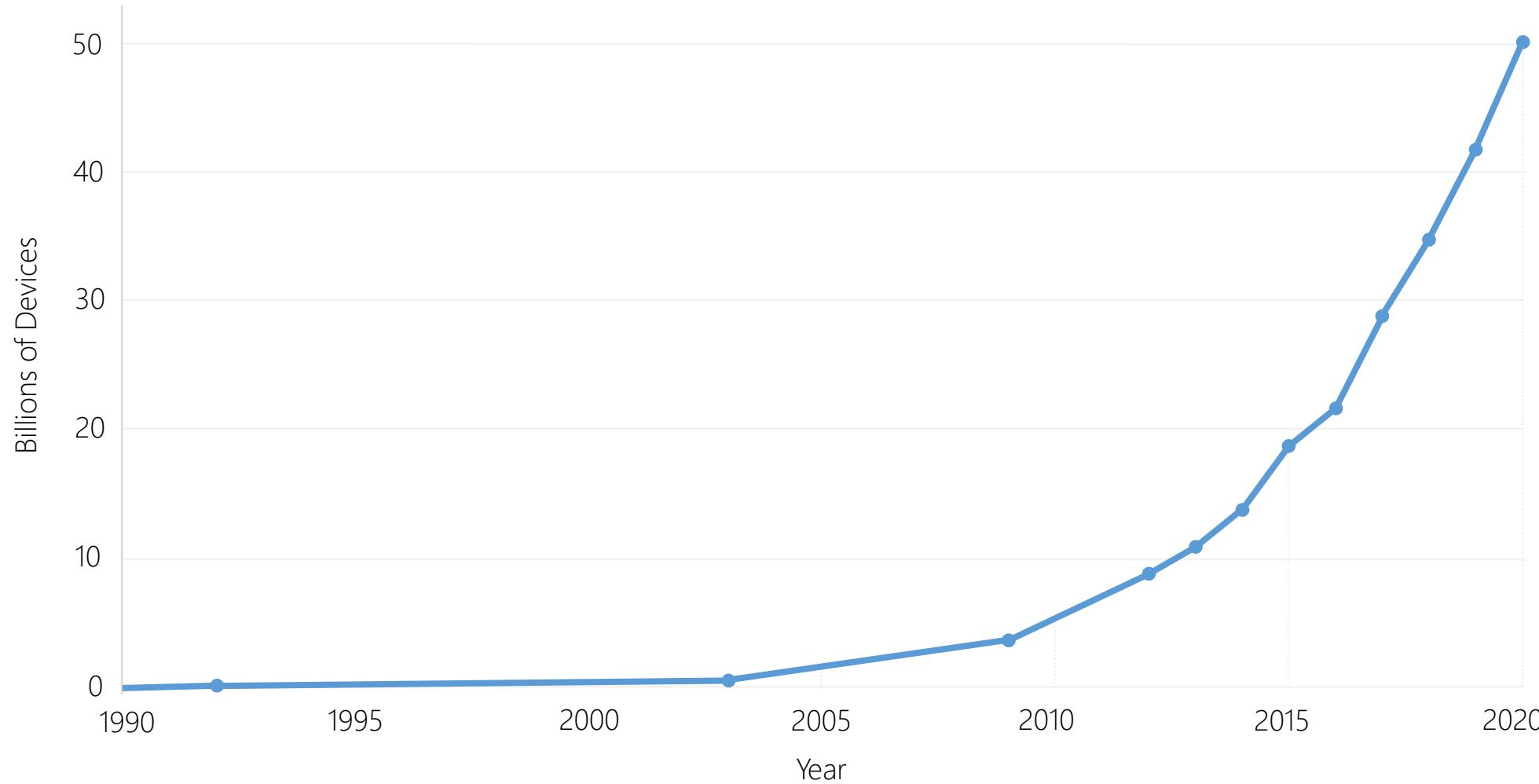


Data science is the heart of AI.

Internet of Things



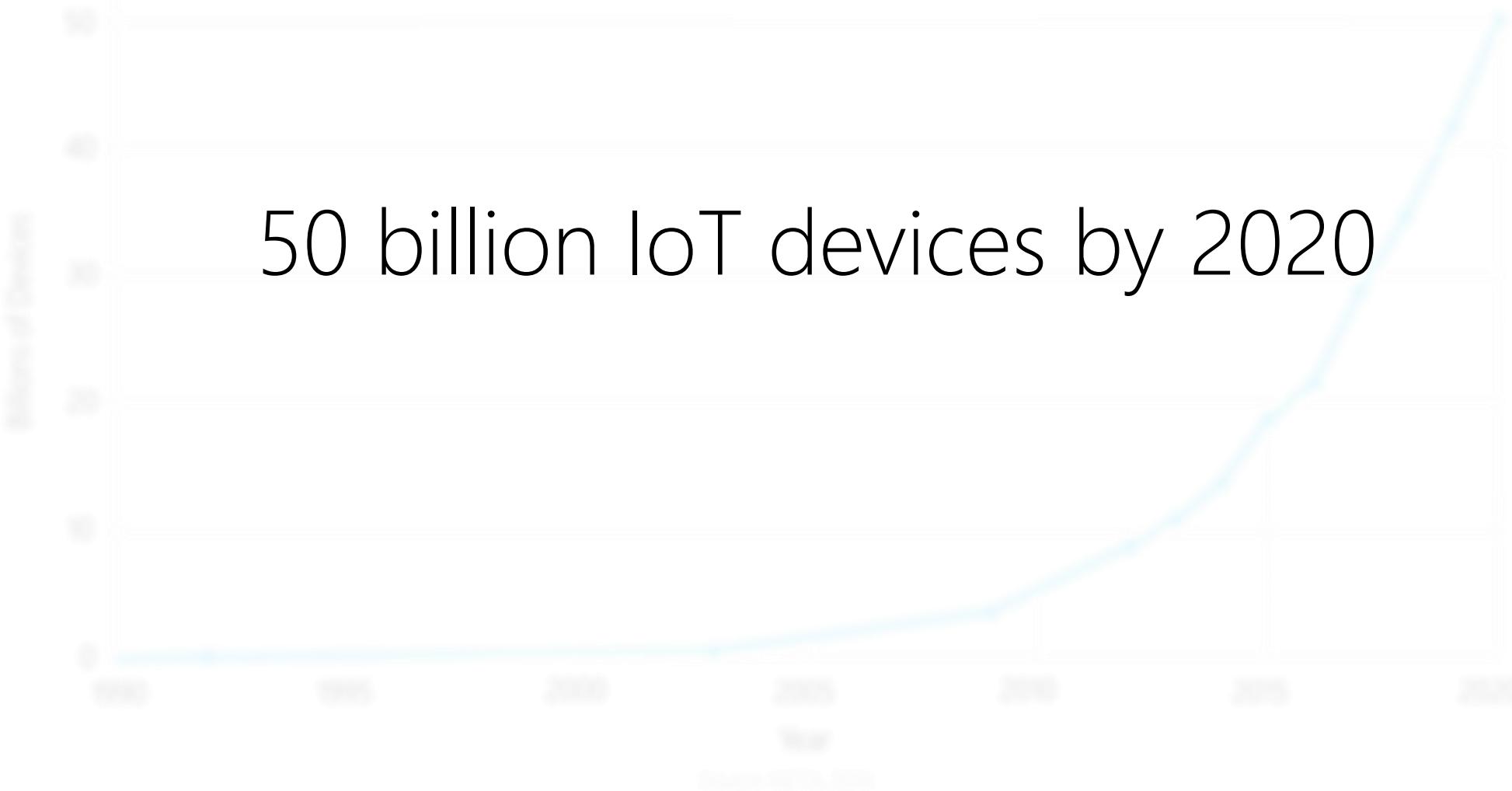
Growth of the IoT Devices



Source: NCTA, 2014

Growth of the IoT Devices

50 billion IoT devices by 2020







REMOTE HOME CONTROL

ONLINE HOME AUTOMATION



CLIMATE



LIGHTING



SECURITY



ENTERTAINMENT

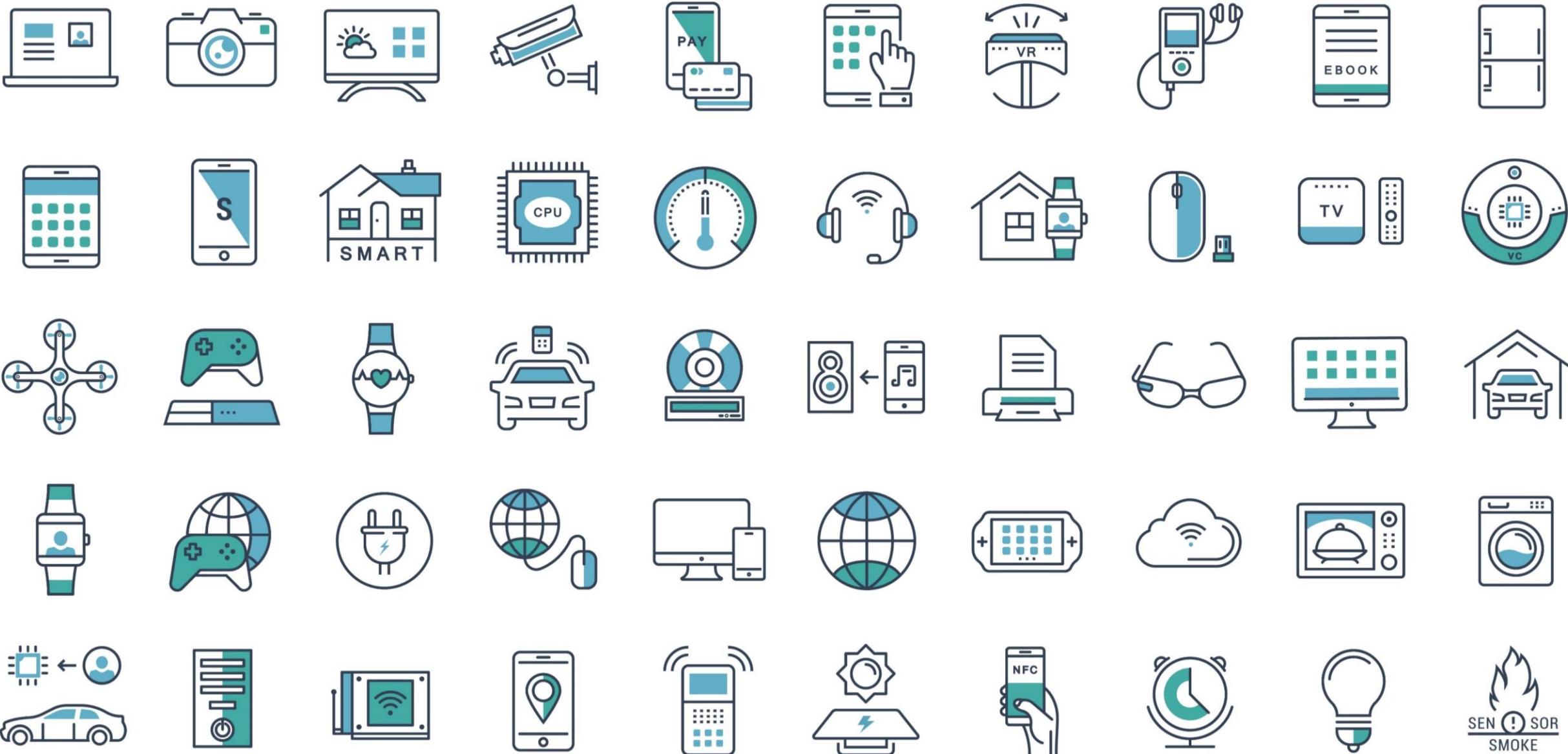


ECO MODE

NORMAL

OFF







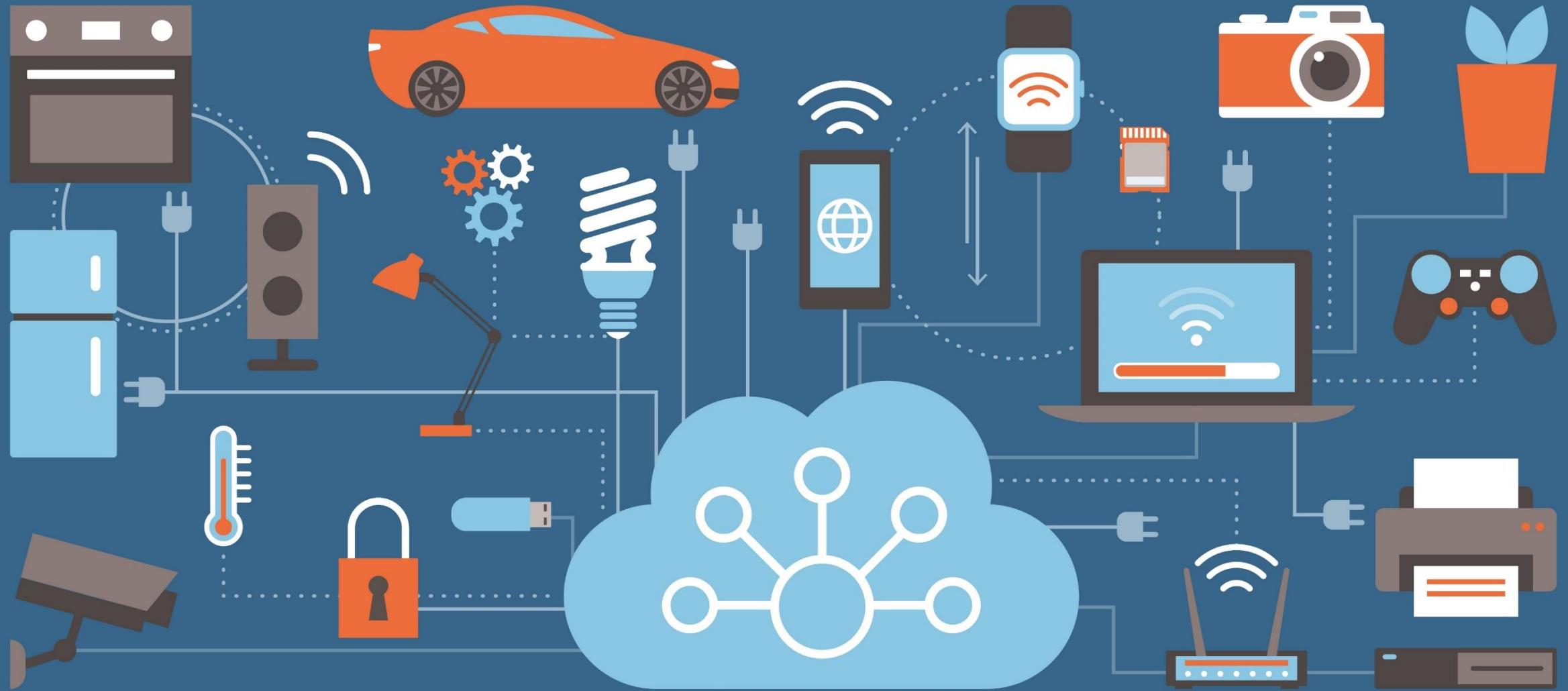


COW TRACKING



81cows in range
Range 100m

Map | List



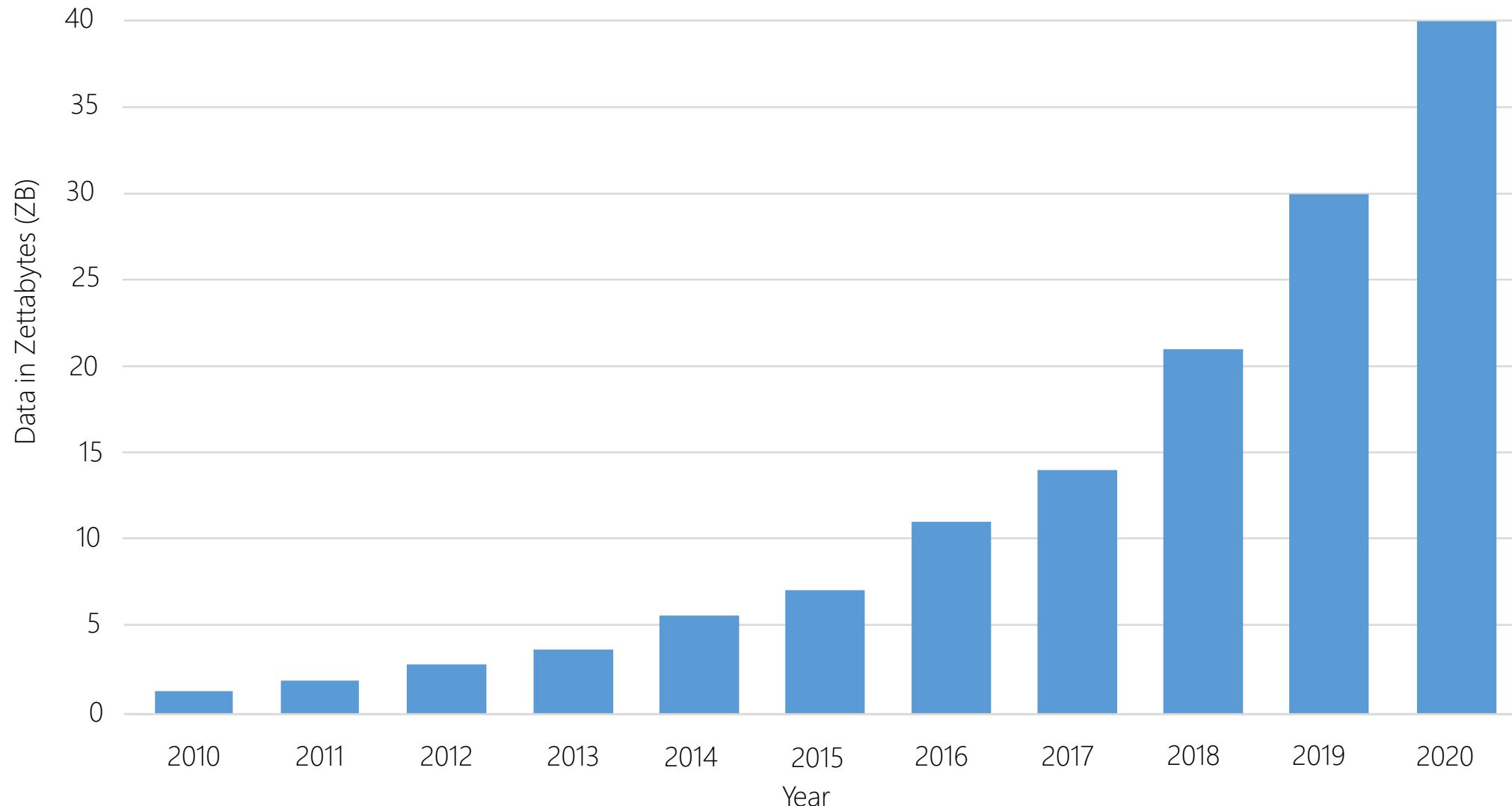




IoT is the body for AI.

Big Data

Global Data Growth

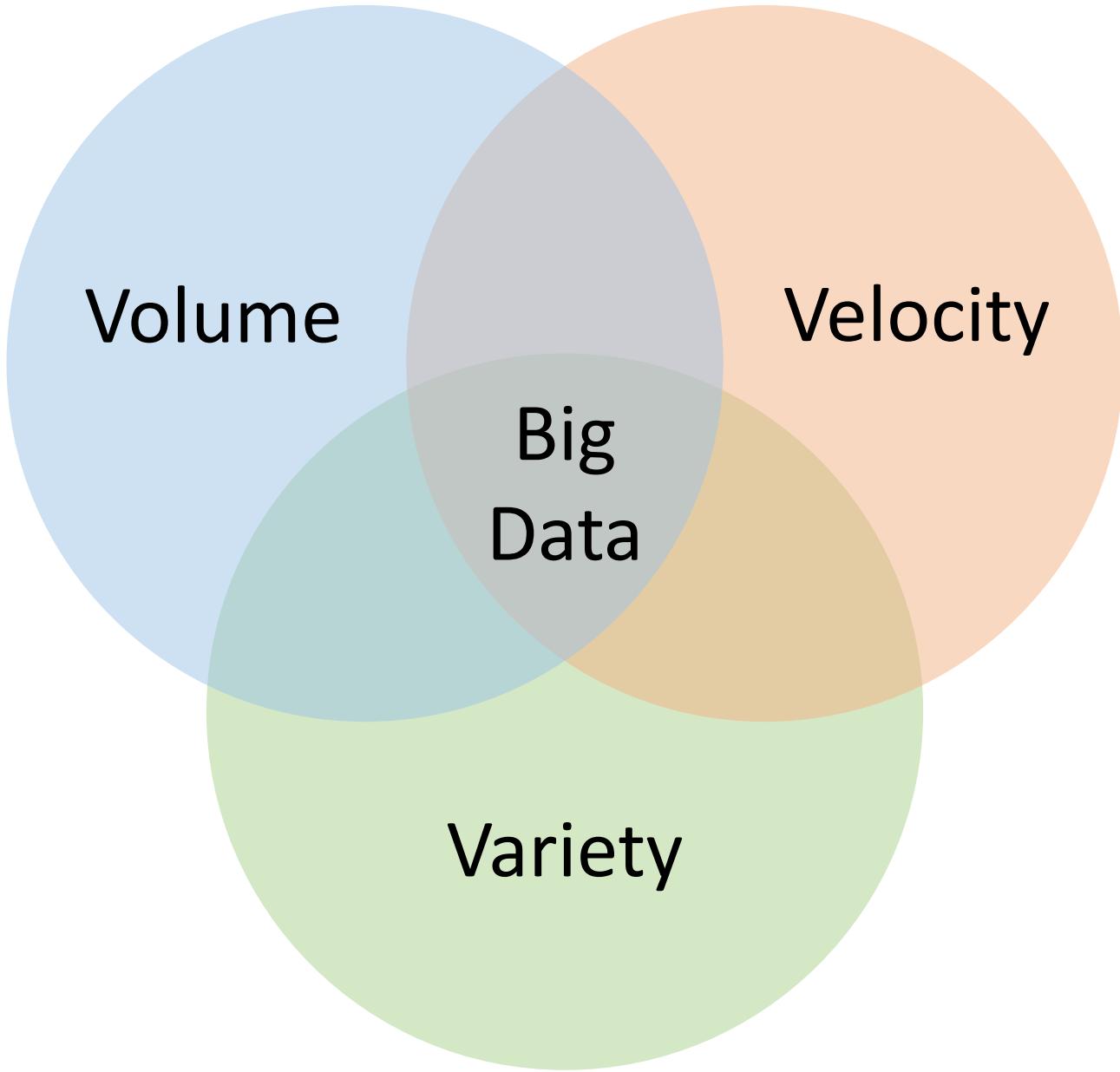


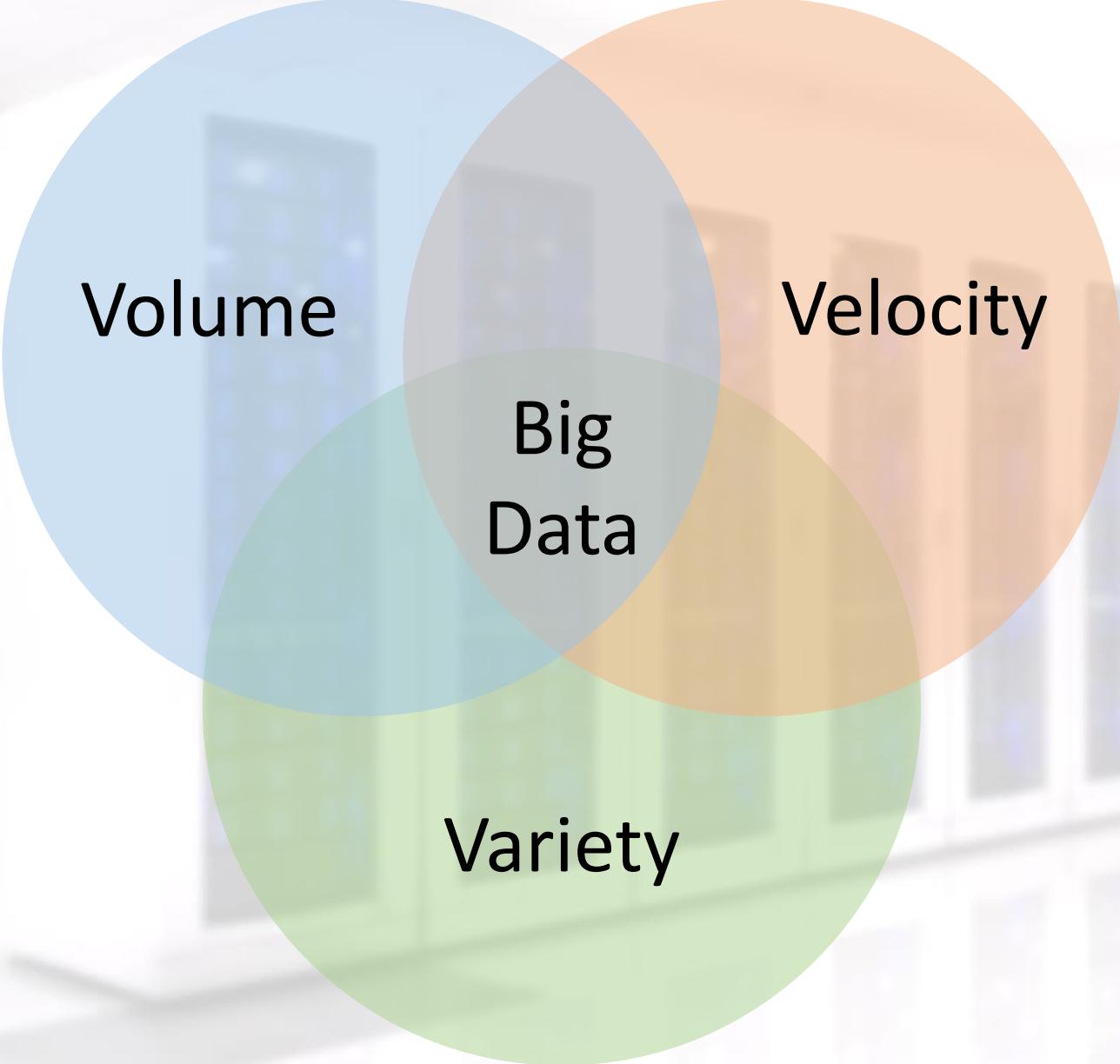
Source: UNECE Statistics Wikis

Global Data Growth

Doubling every two years







Volume

Velocity

Big
Data

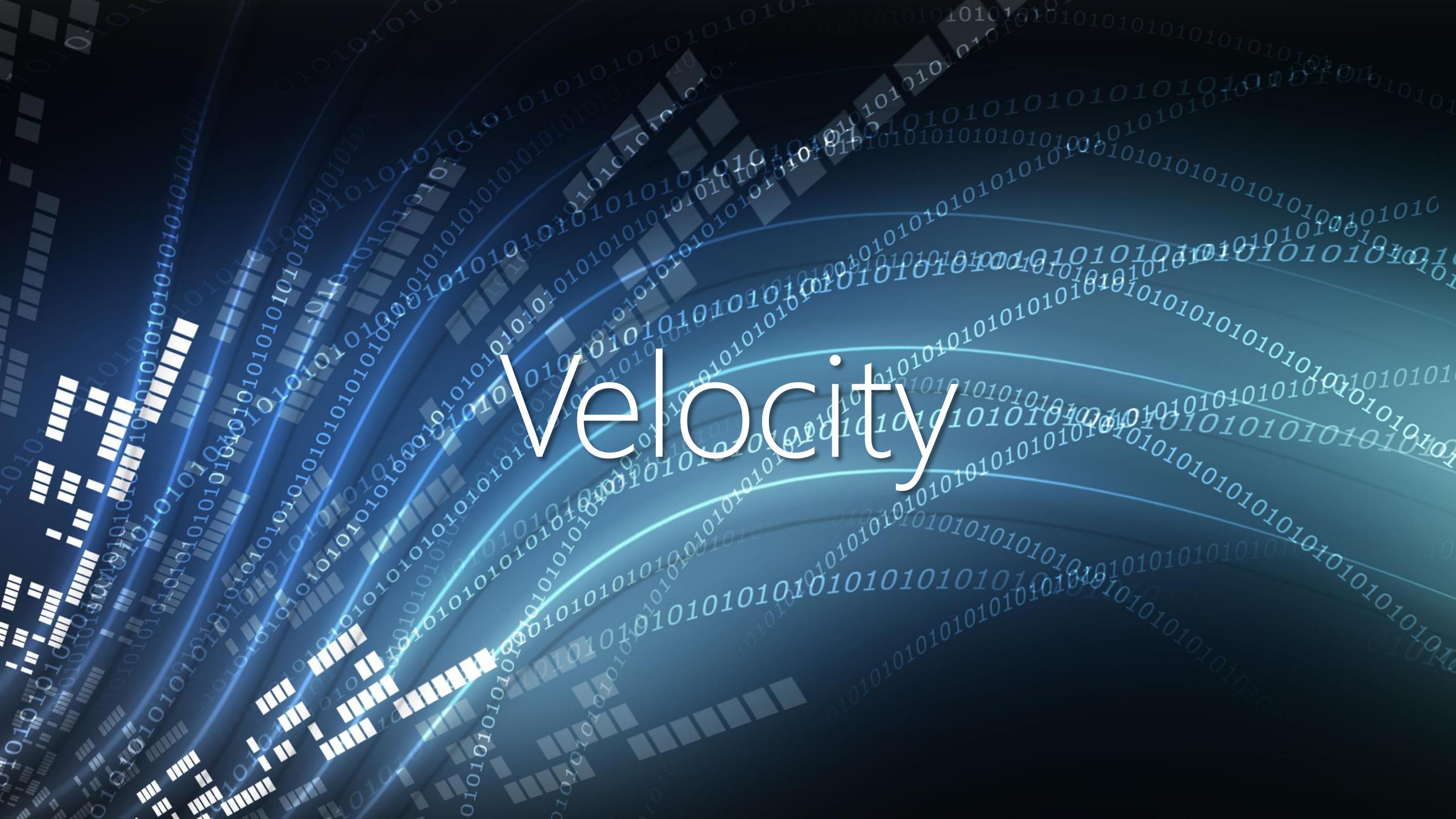
Variety



Volume

A 3



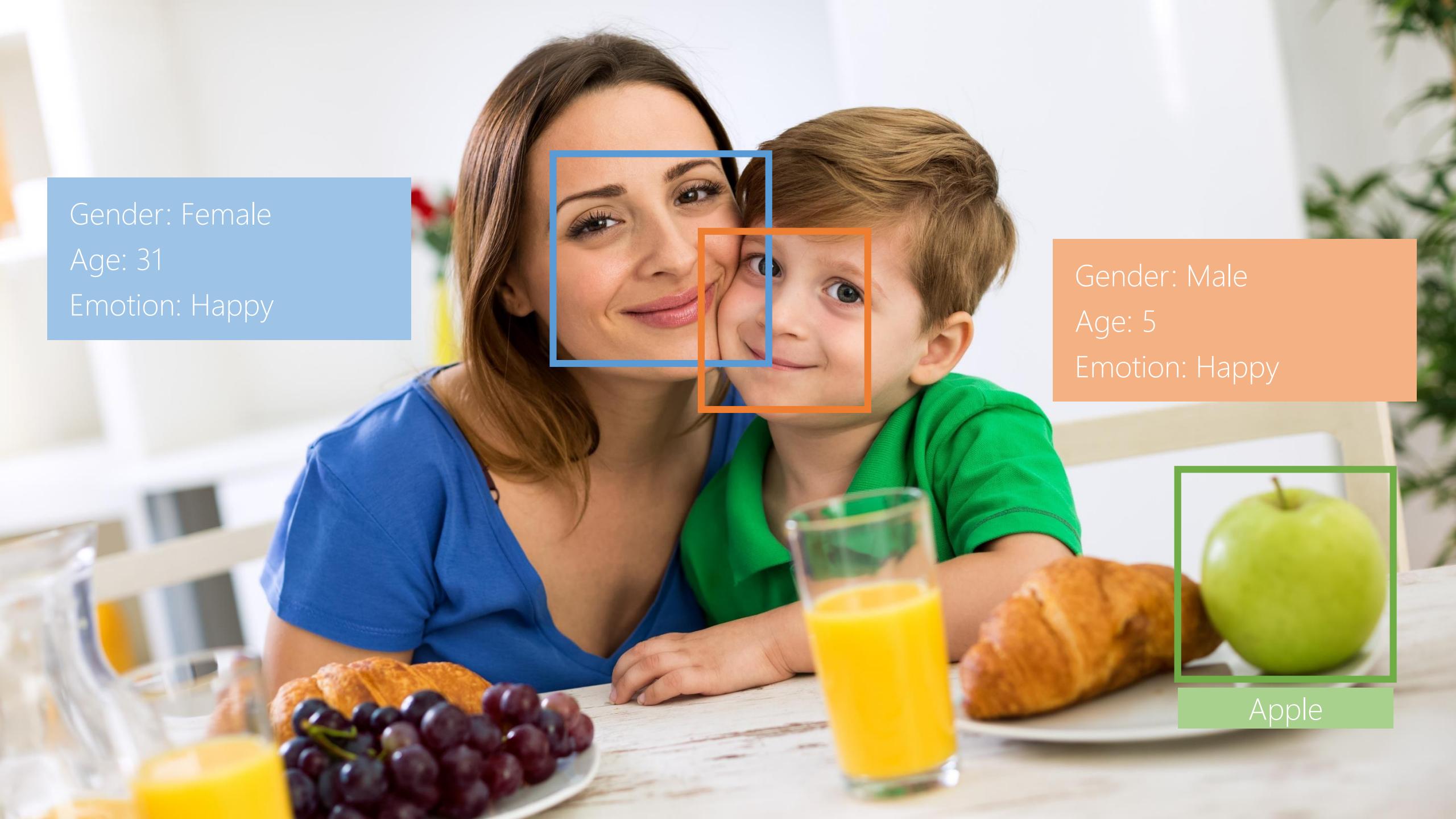


velocity





Variety



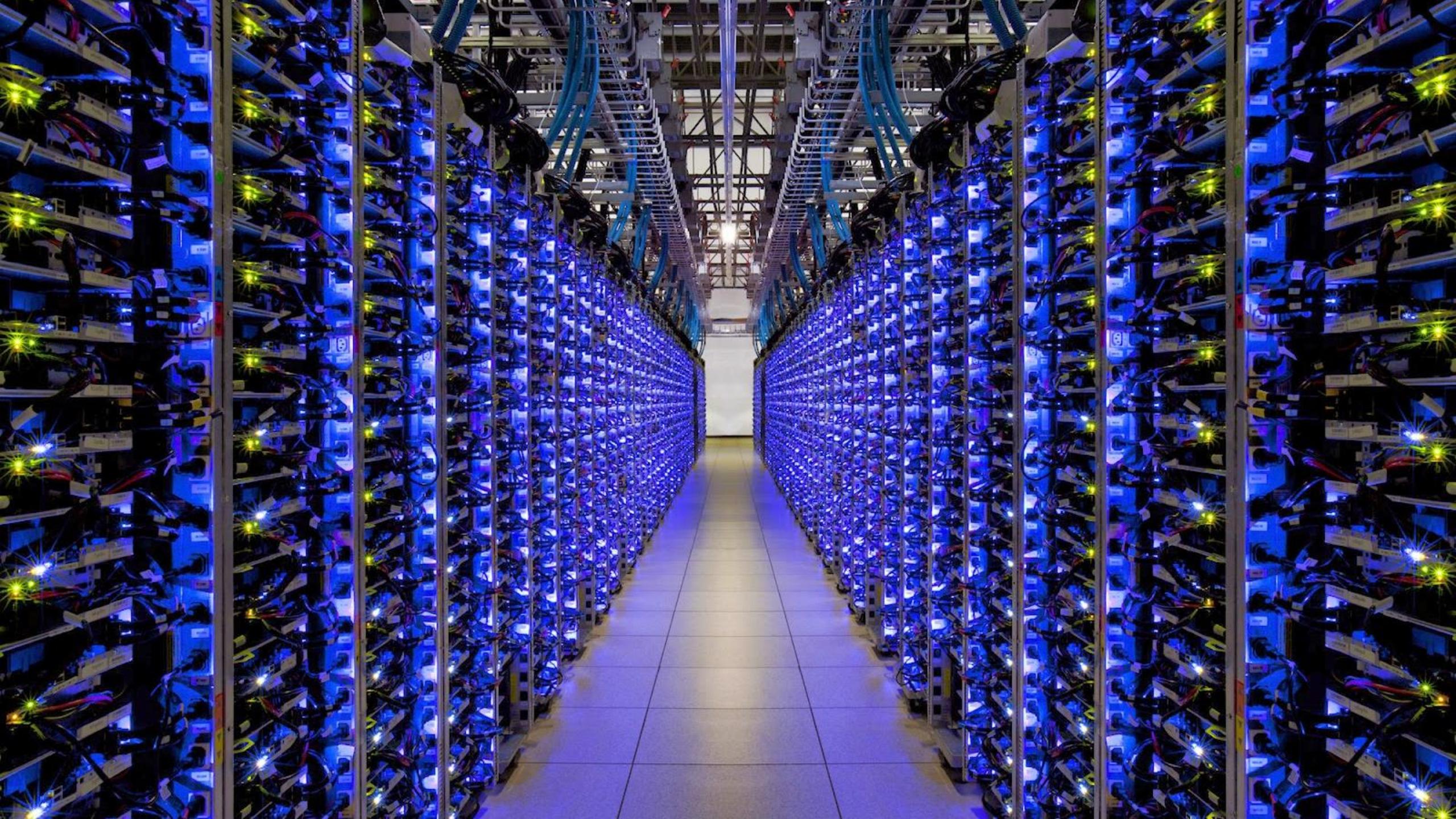
Gender: Female
Age: 31
Emotion: Happy



Gender: Male
Age: 5
Emotion: Happy



Apple





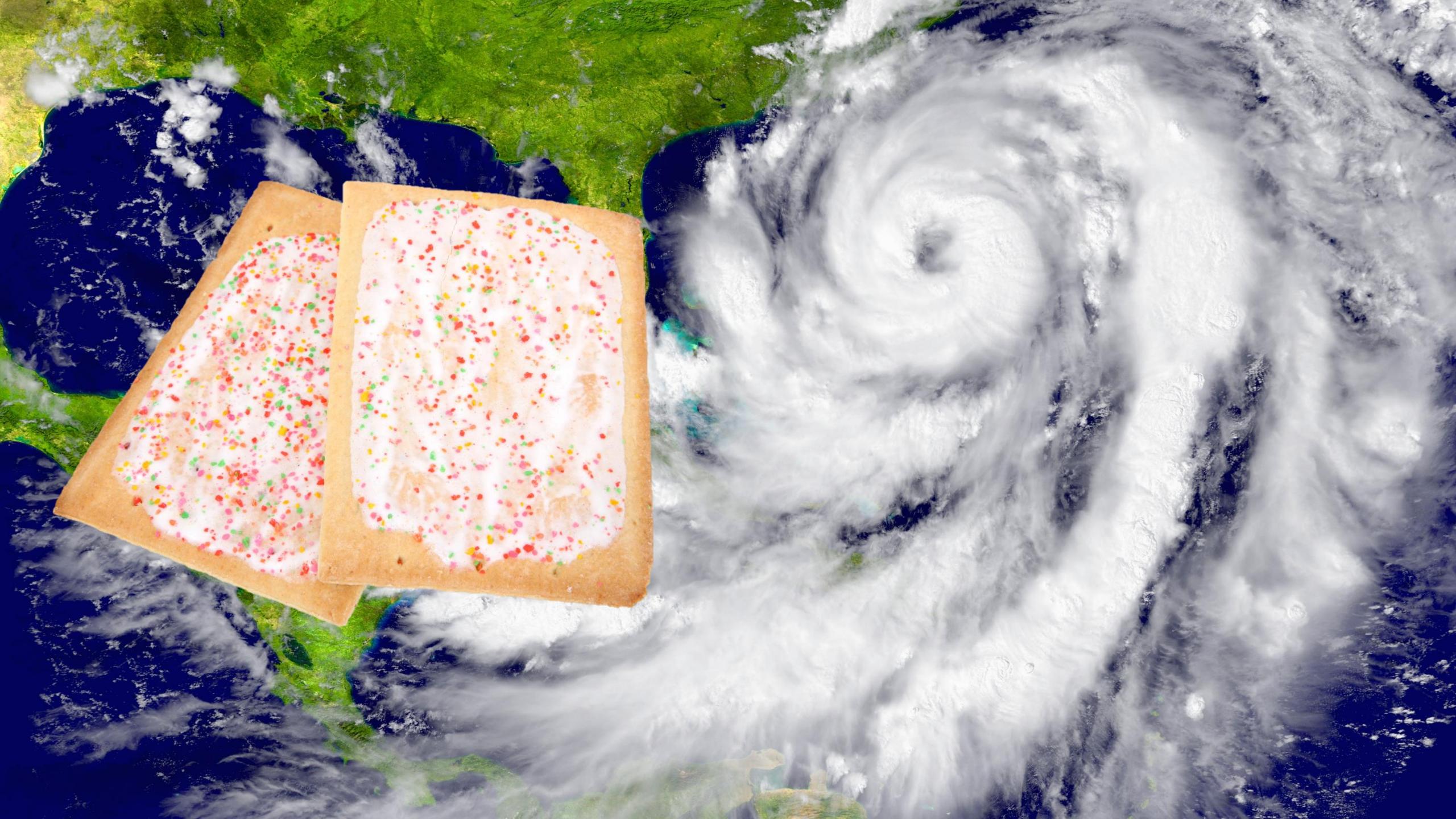


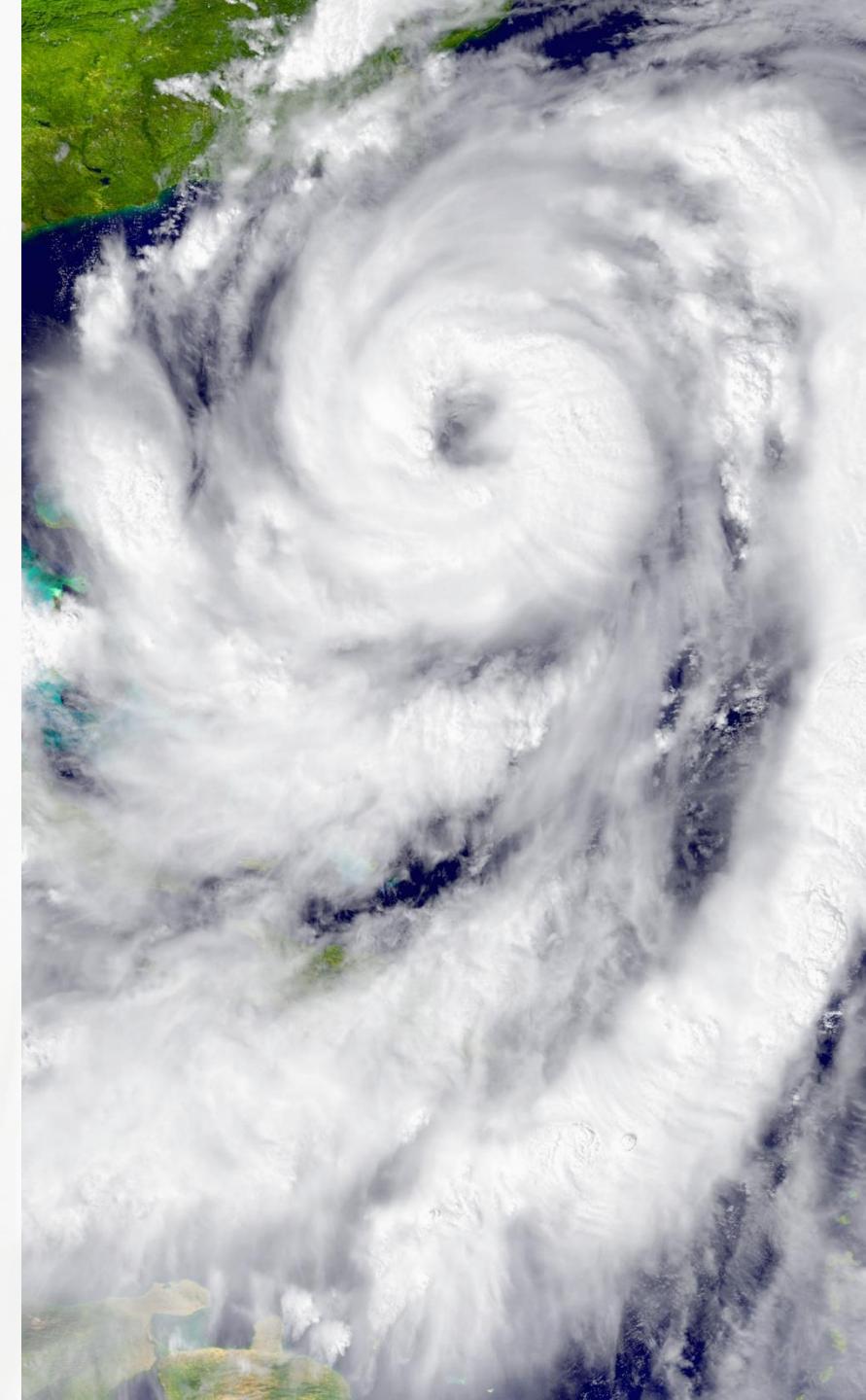




| August 2017 | | | | | | |
|-------------|-----|-----|-----|-----|-----|-----|
| Sun | Mon | Tue | Wed | Thu | Fri | Sat |
| | | | 1 | 2 | 3 | 4 |
| 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| 20 | 21 | 22 | 23 | 24 | 25 | 26 |
| 27 | 28 | 29 | 30 | 31 | | |
| | | | | | | |



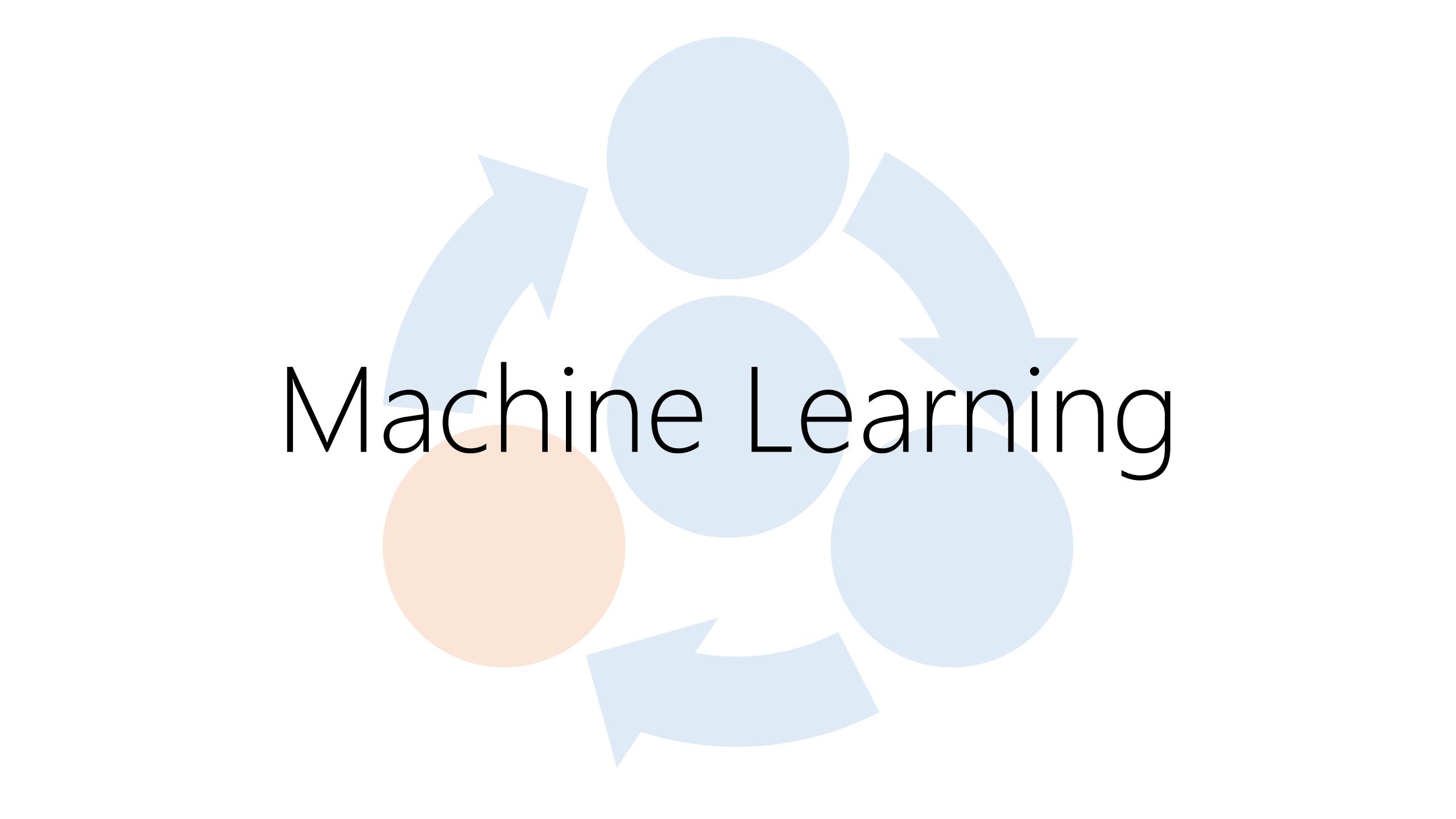




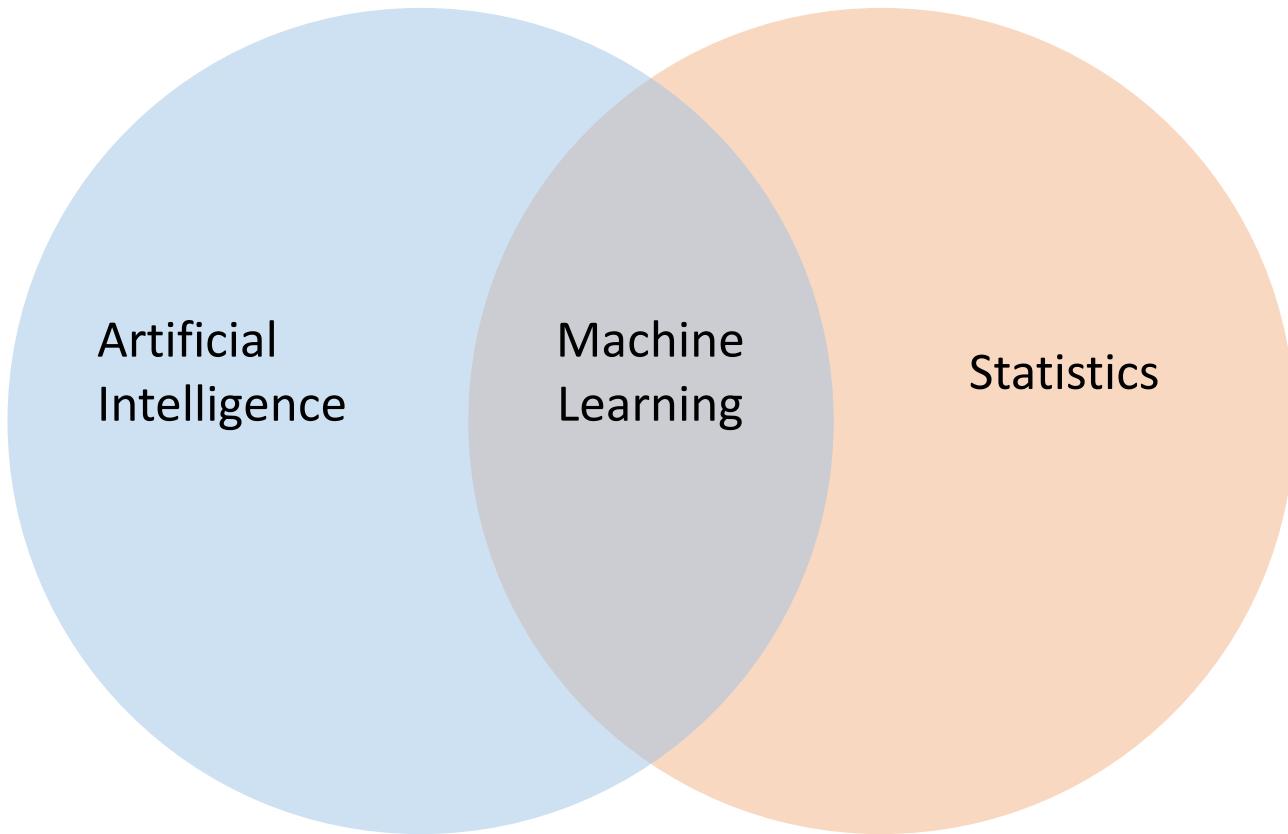


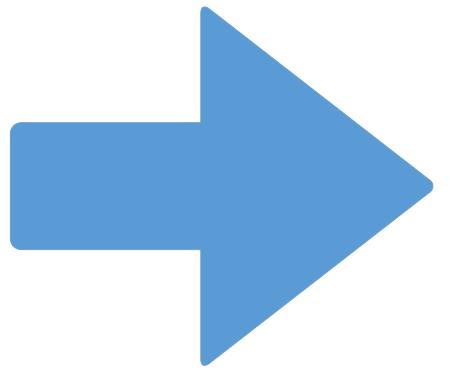
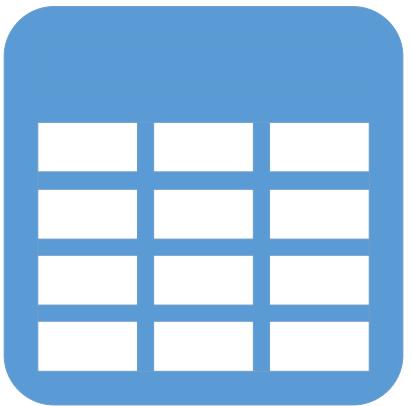
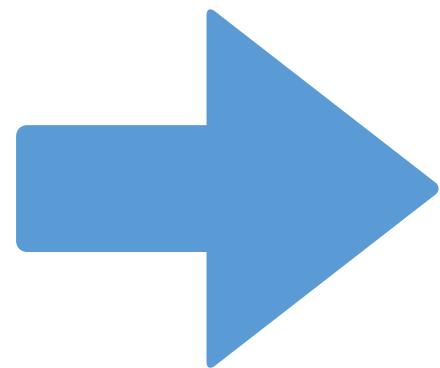
A perspective view of a long row of server racks in a data center. The racks are white with dark glass doors. Blue lights are visible through the doors, indicating active server units. The ceiling above is white with a grid of recessed lighting. A small sign on the ceiling reads "A 3".

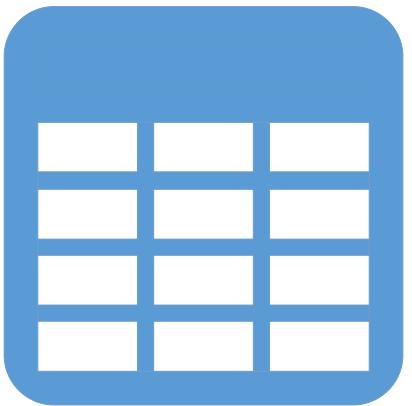
Big Data is the brain for AI.

The background features a circular arrangement of five overlapping circles in light blue, light grey, and orange. Four large, semi-transparent arrows in the same colors (light blue, light grey, orange, and light blue) form a clockwise cycle, pointing from one circle to the next.

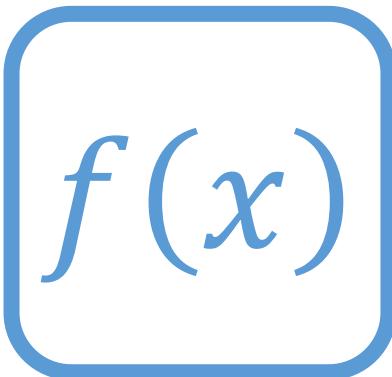
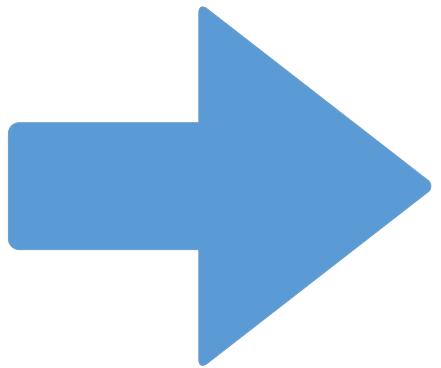
Machine Learning



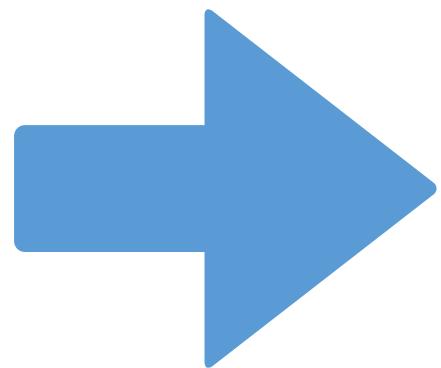
 $f(x)$ 



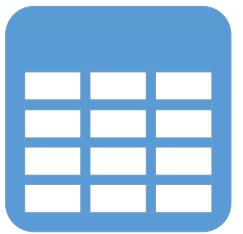
Data



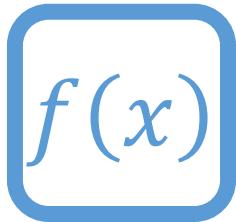
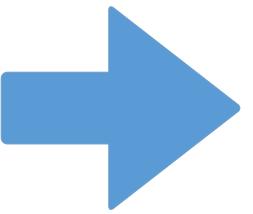
Function



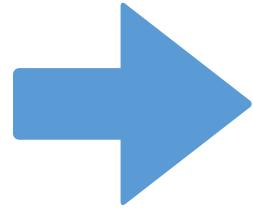
Prediction



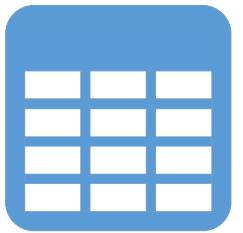
Data



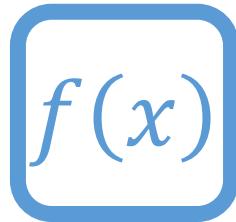
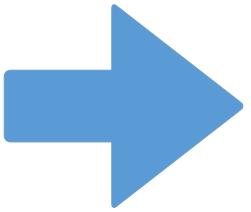
Function



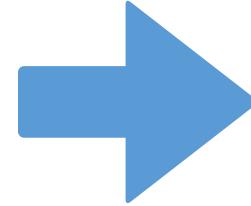
Prediction



Data

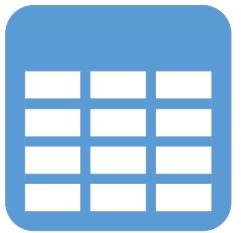


Function

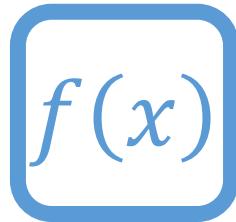
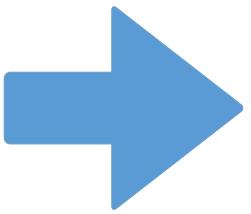


Prediction

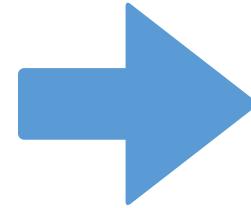




Data



Function



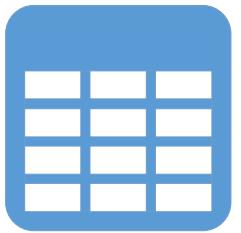
Prediction



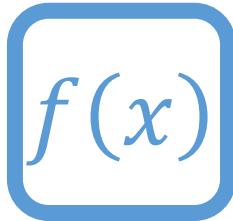
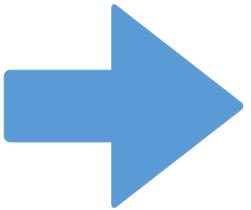
Cat



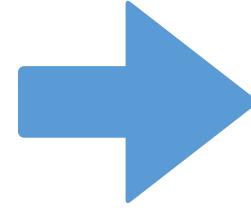
Dog



Data



Function



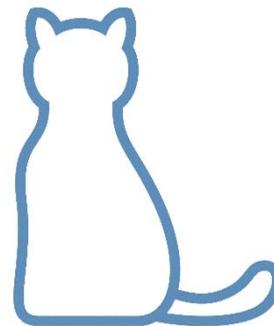
Prediction

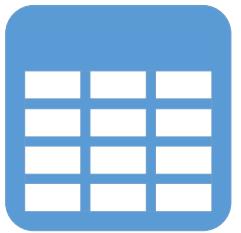


Cat

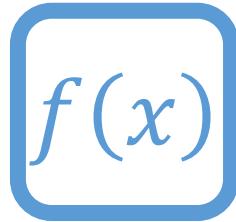
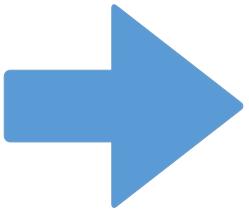


Dog

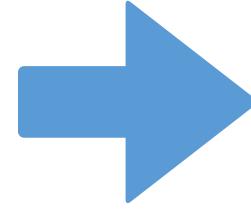




Data



Function



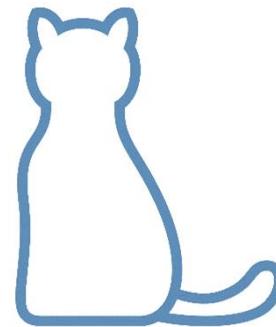
Prediction



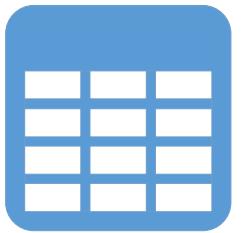
Cat



Dog



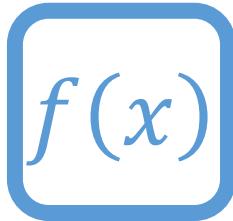
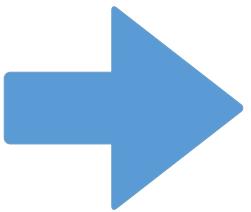
Is cat?



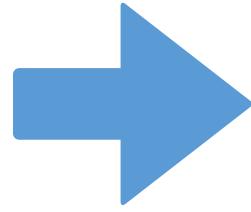
Data



Cat



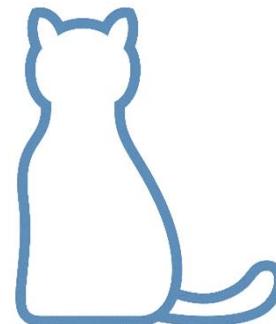
Function



Prediction

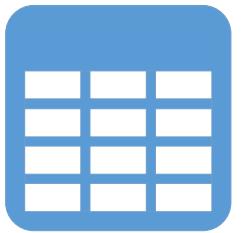


Dog



Is cat?

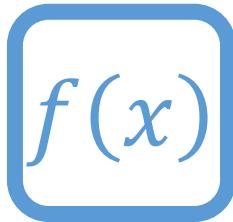
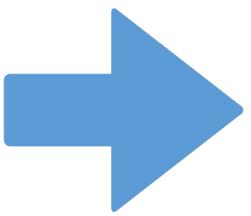




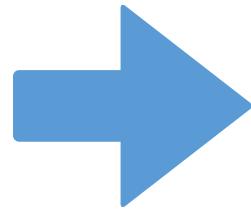
Data



Cat



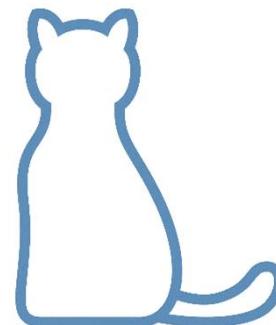
Function



Prediction



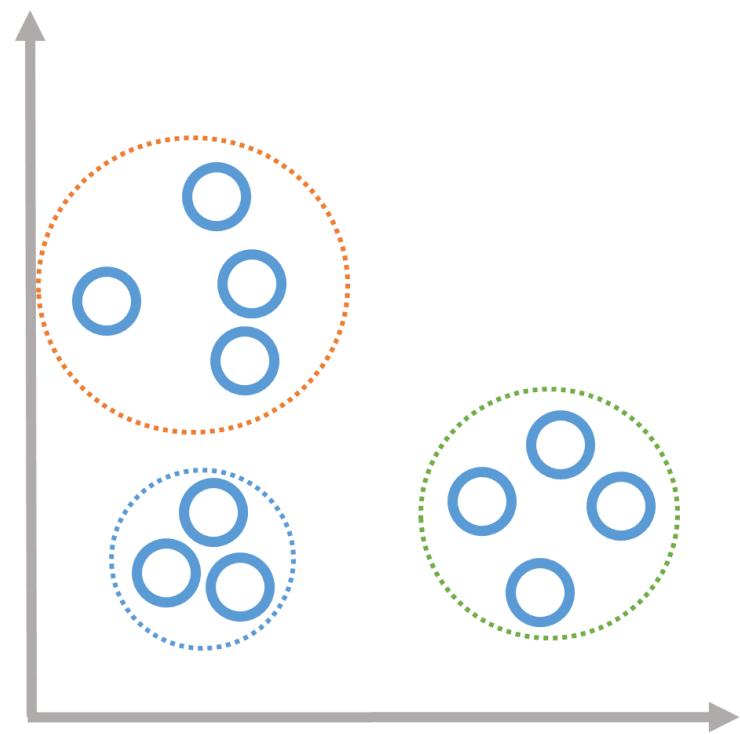
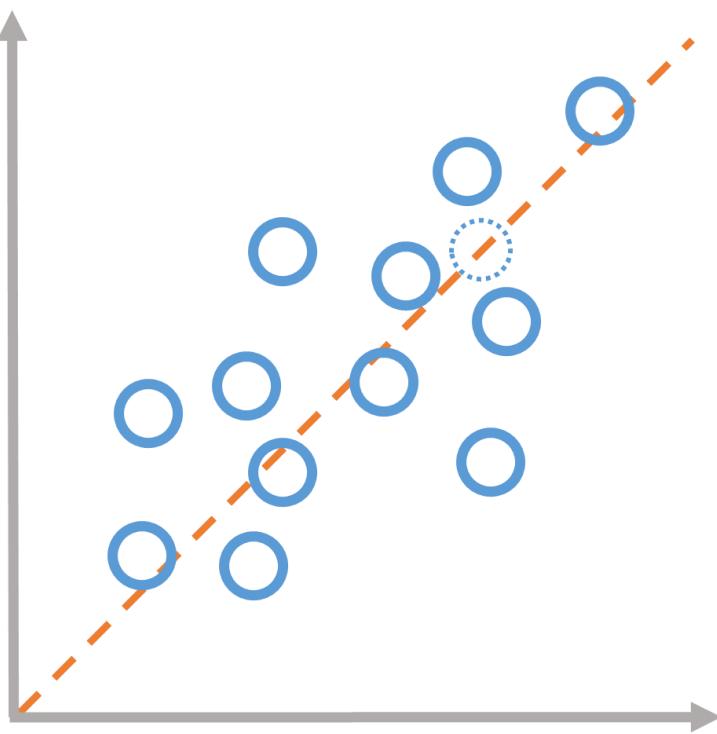
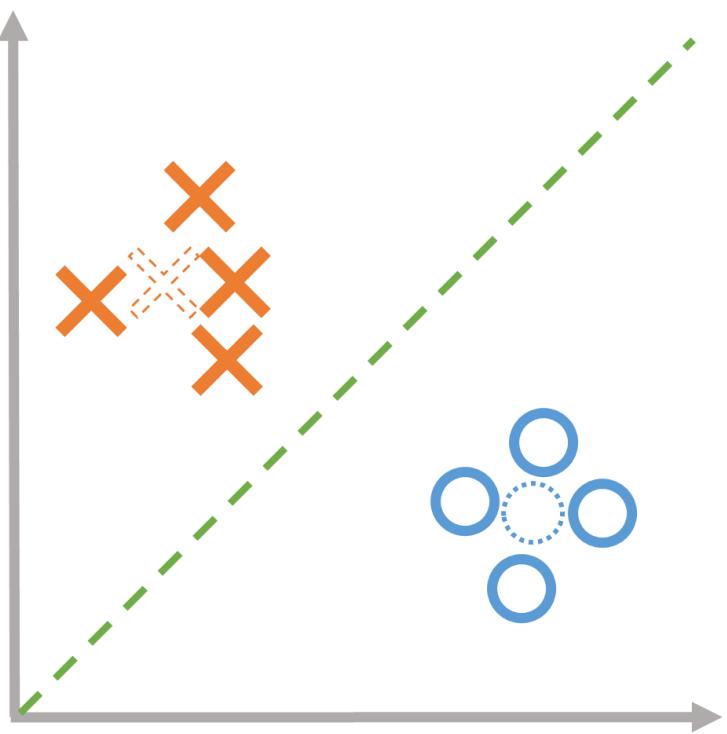
Dog

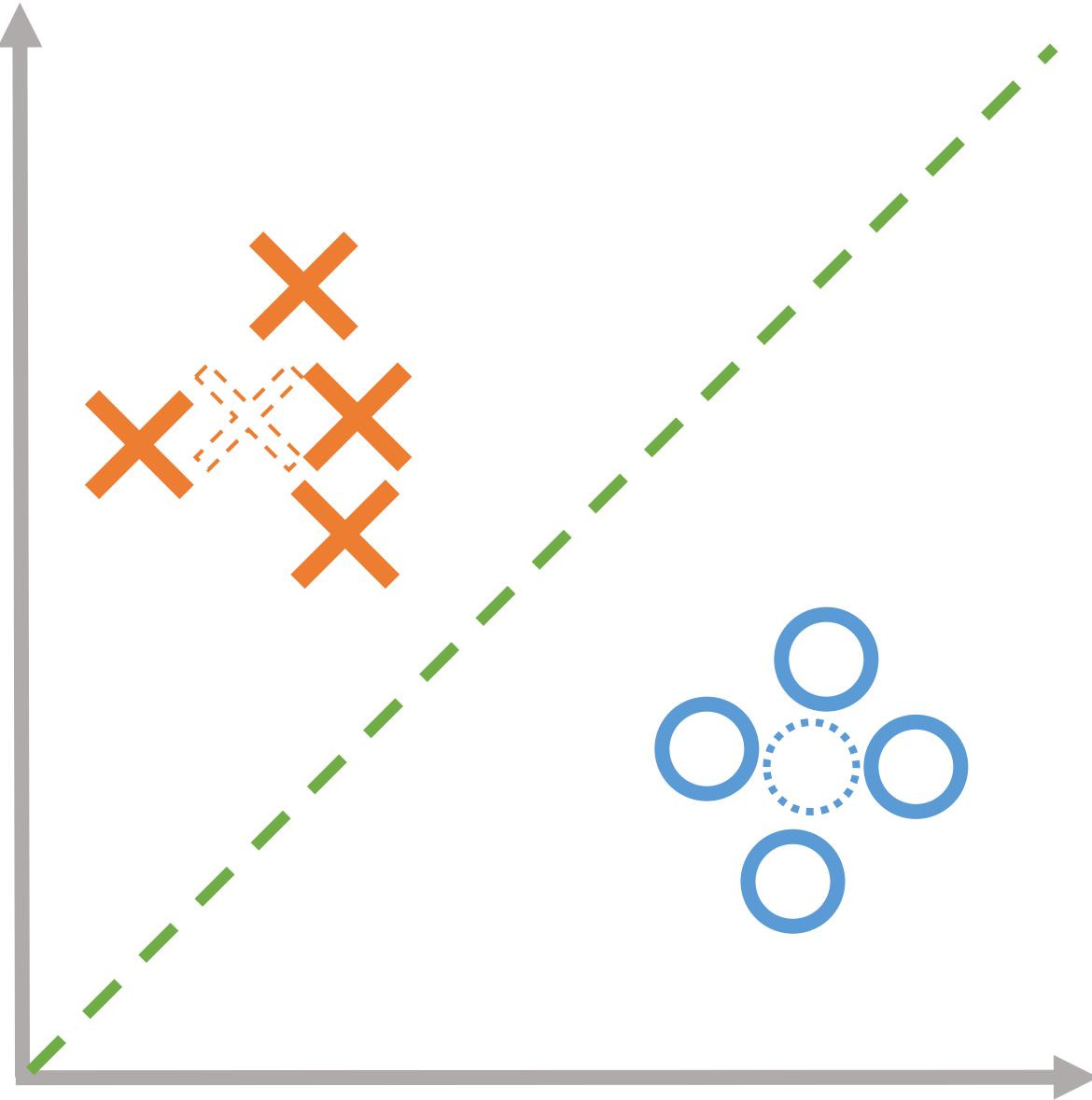


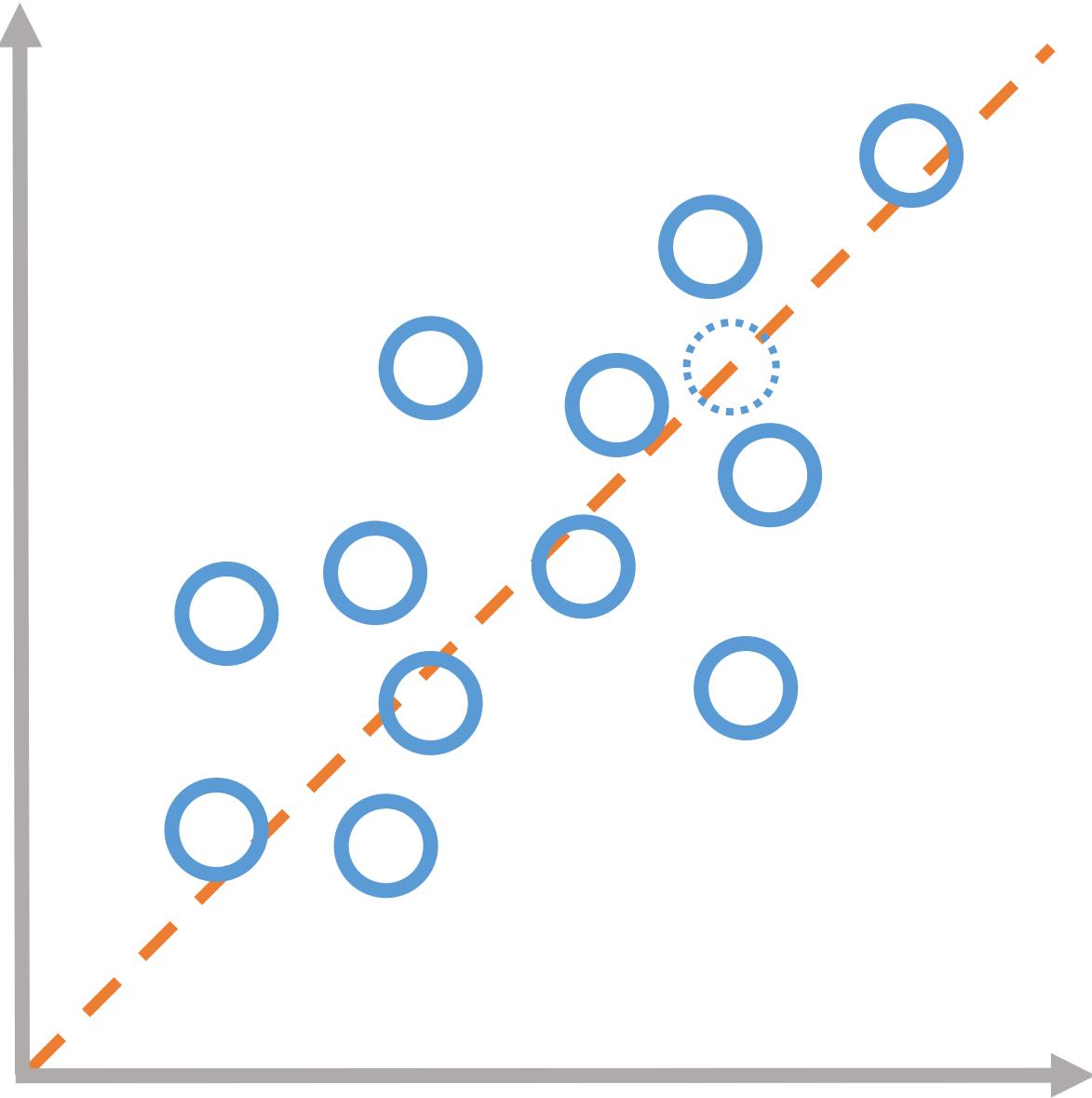
Is cat?

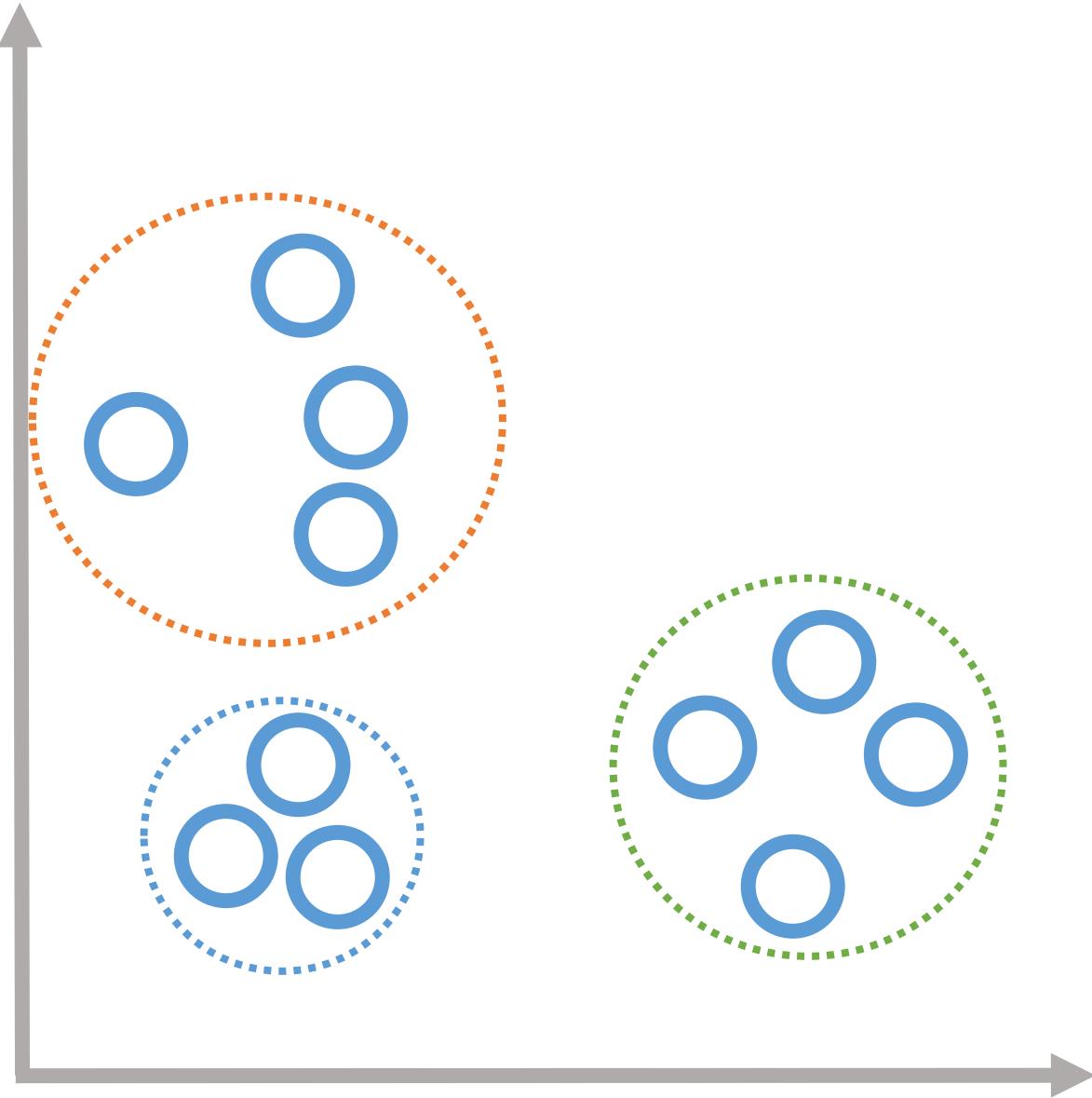


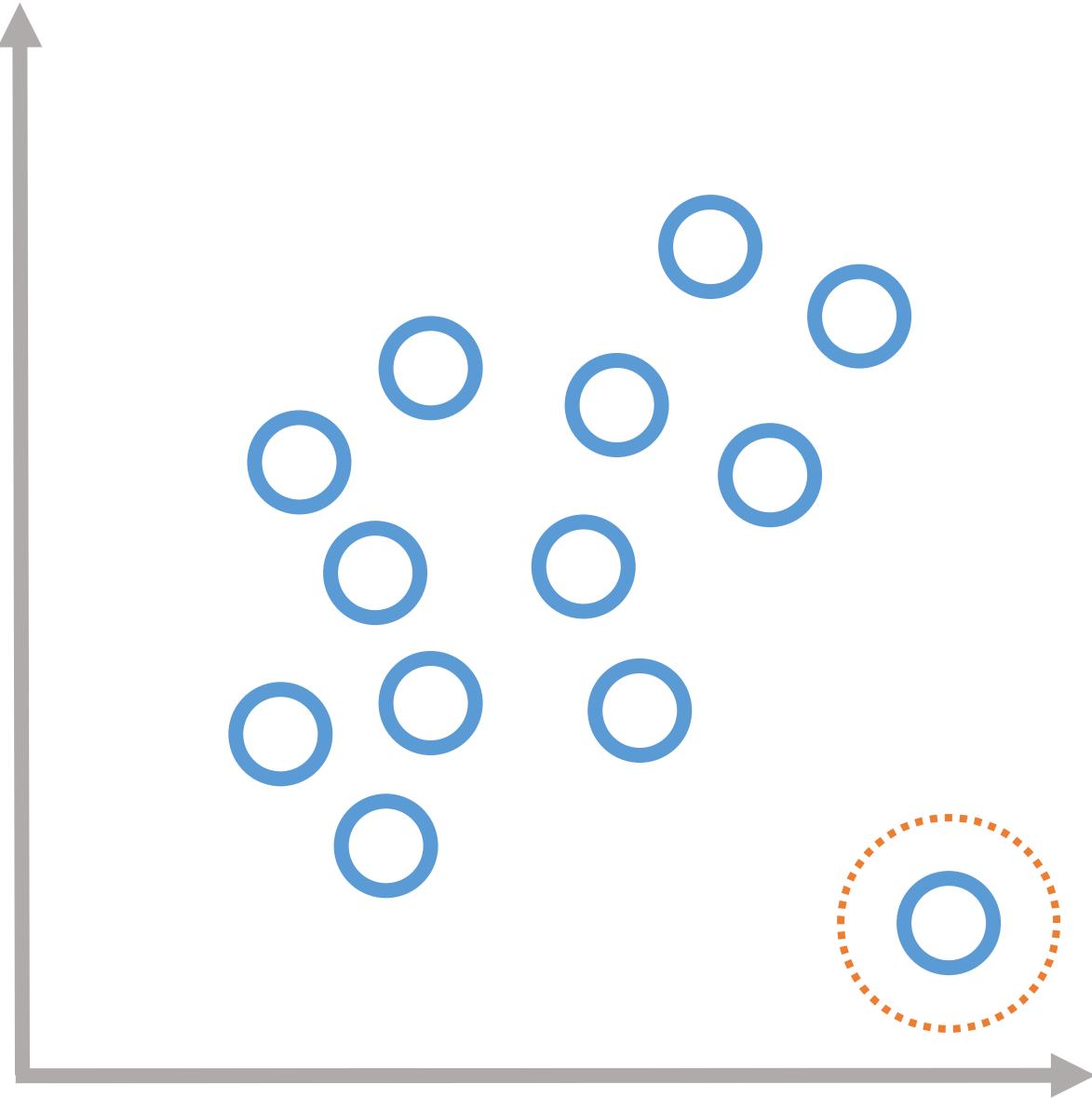
Yes

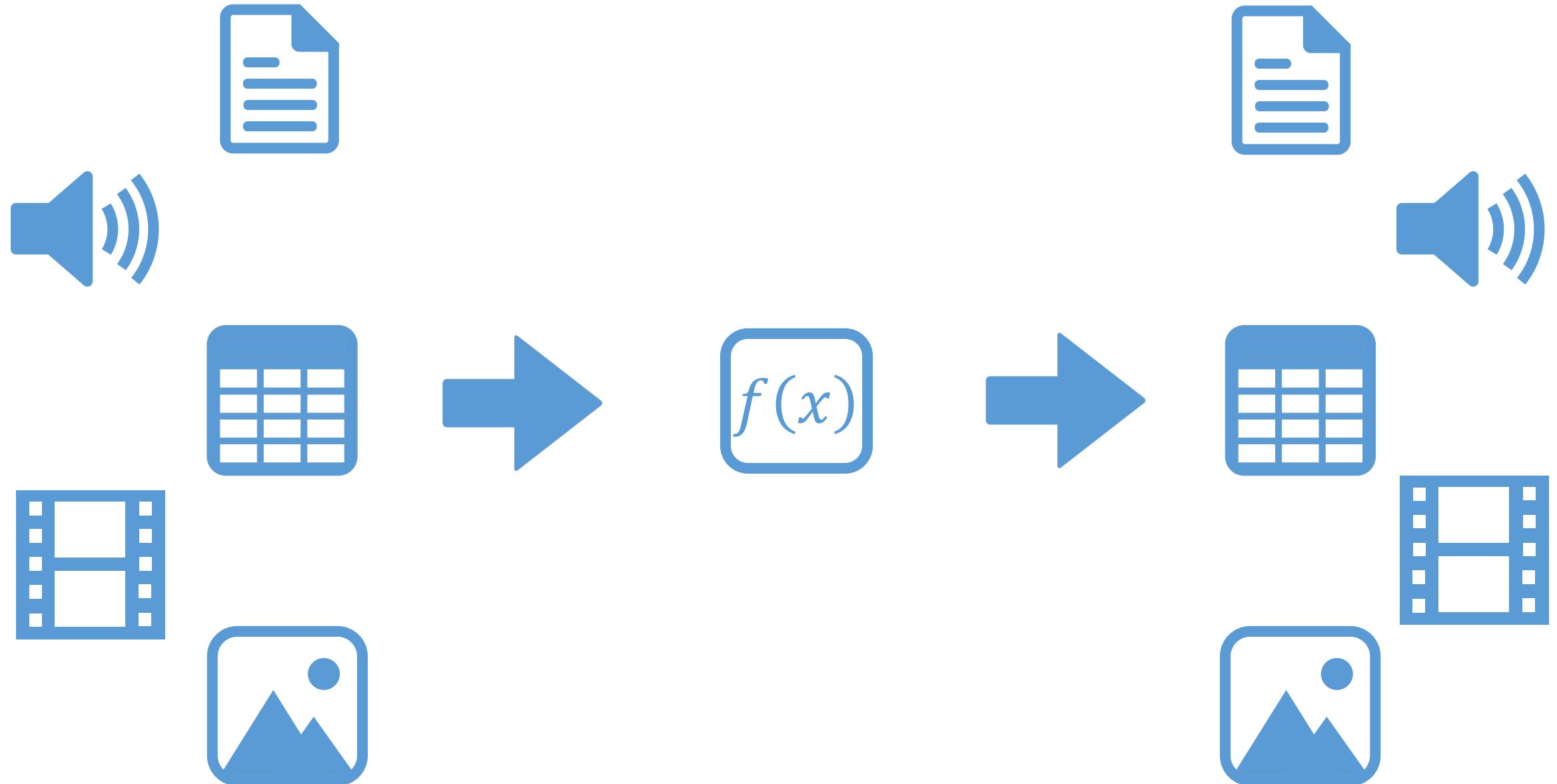


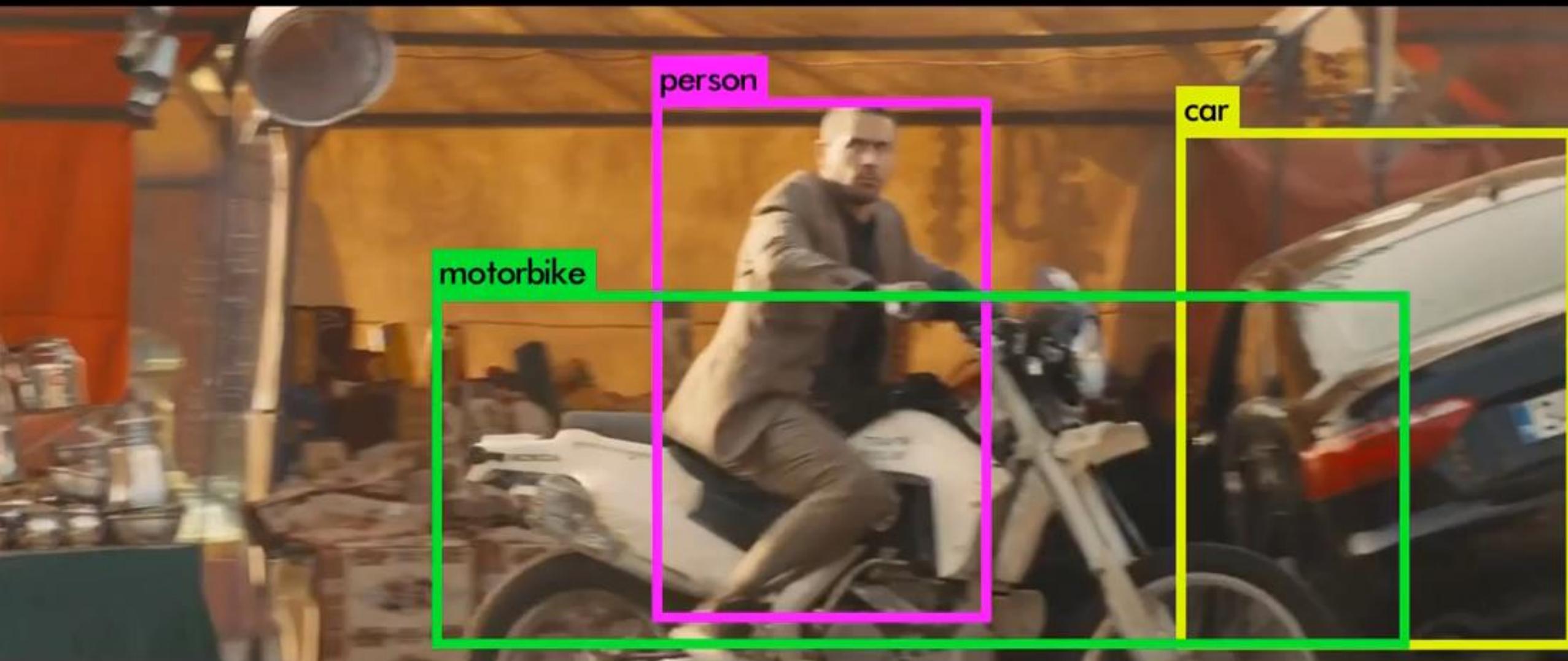










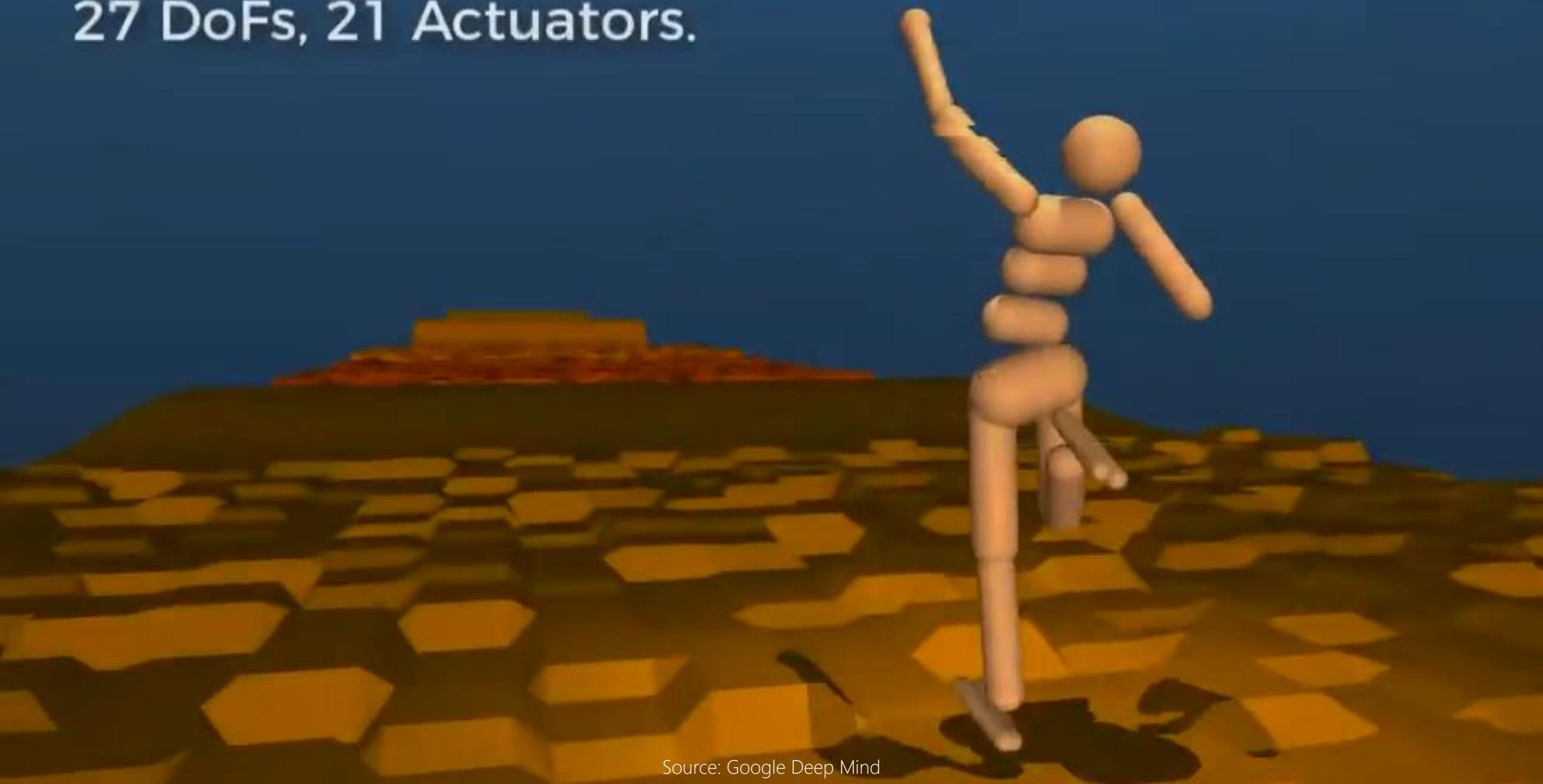


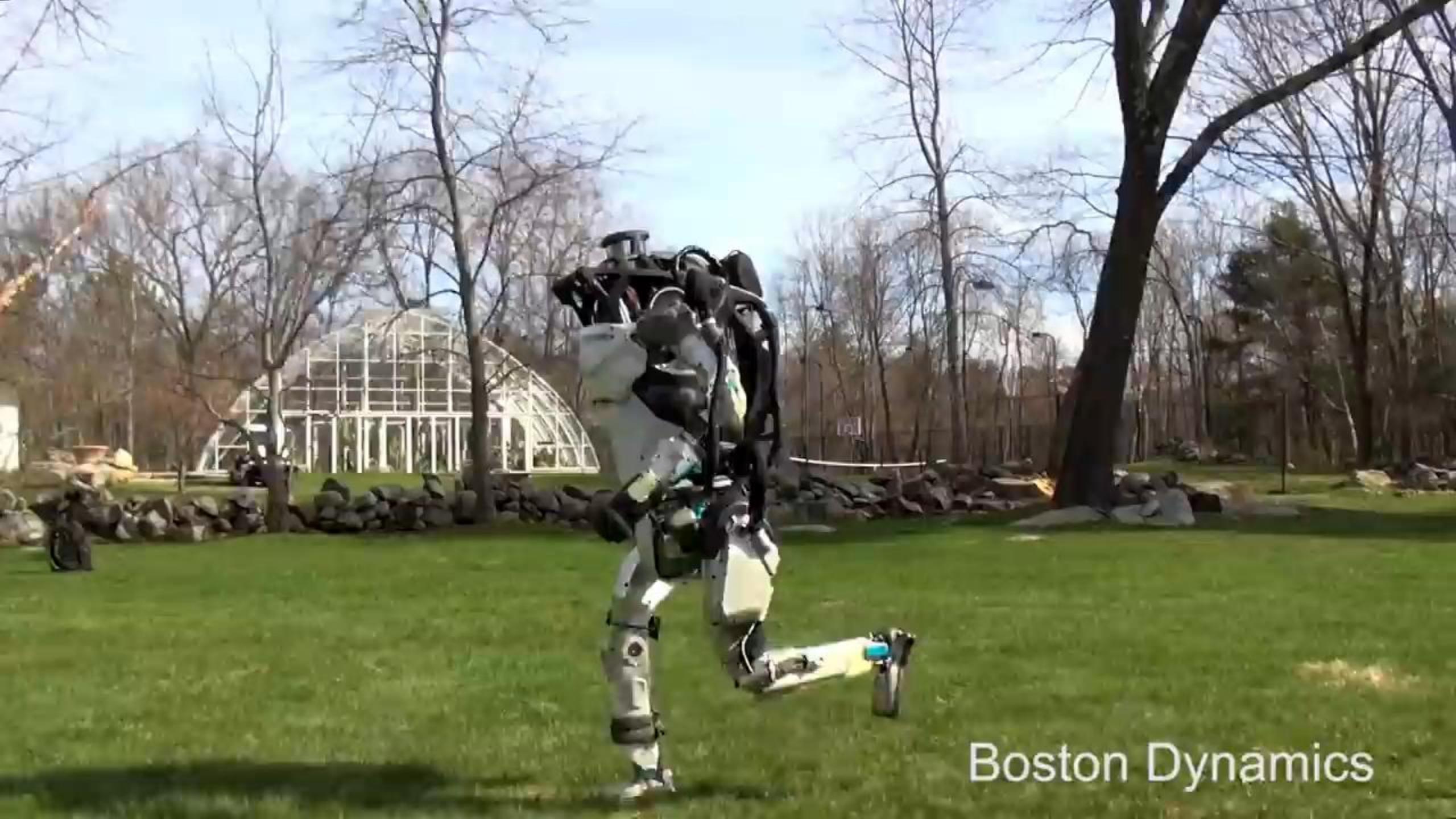


Source: Nvidia



Humanoid:
27 DoFs, 21 Actuators.

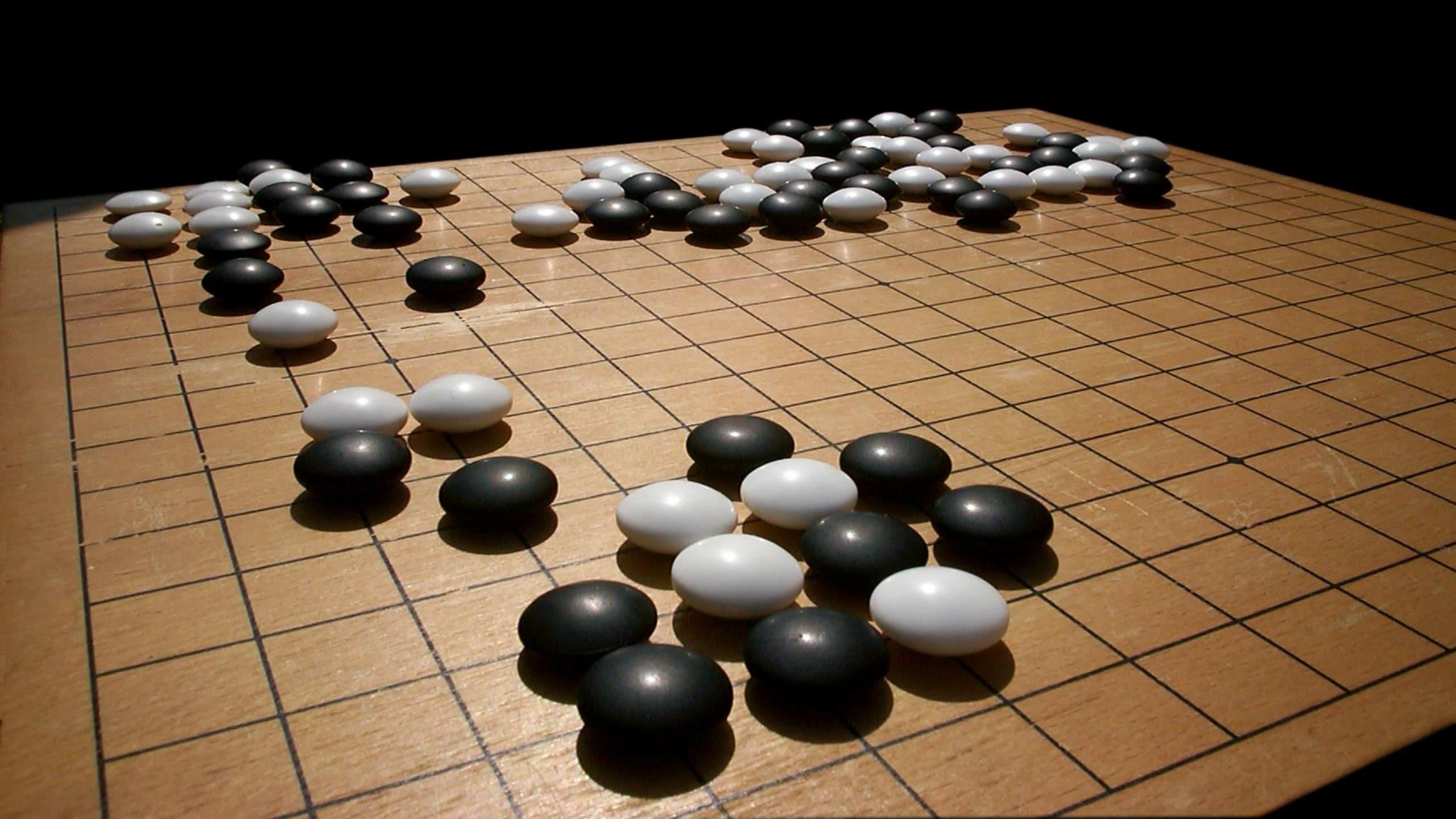




Boston Dynamics

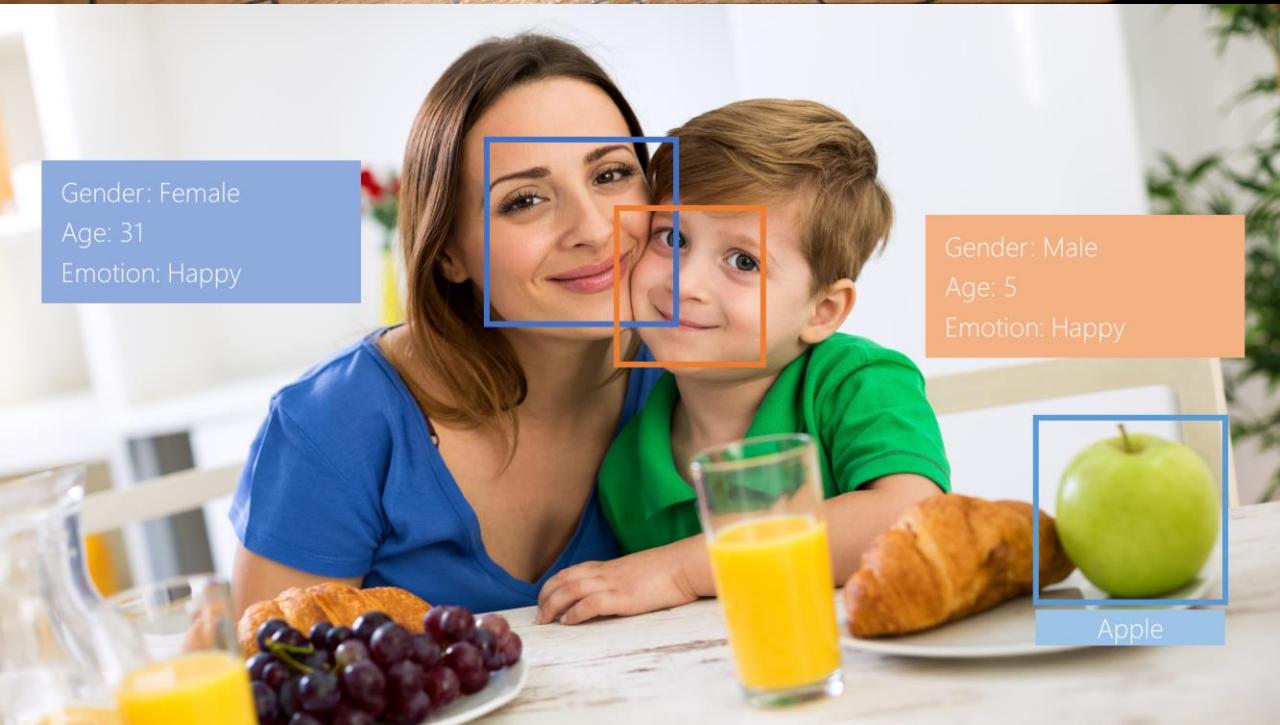
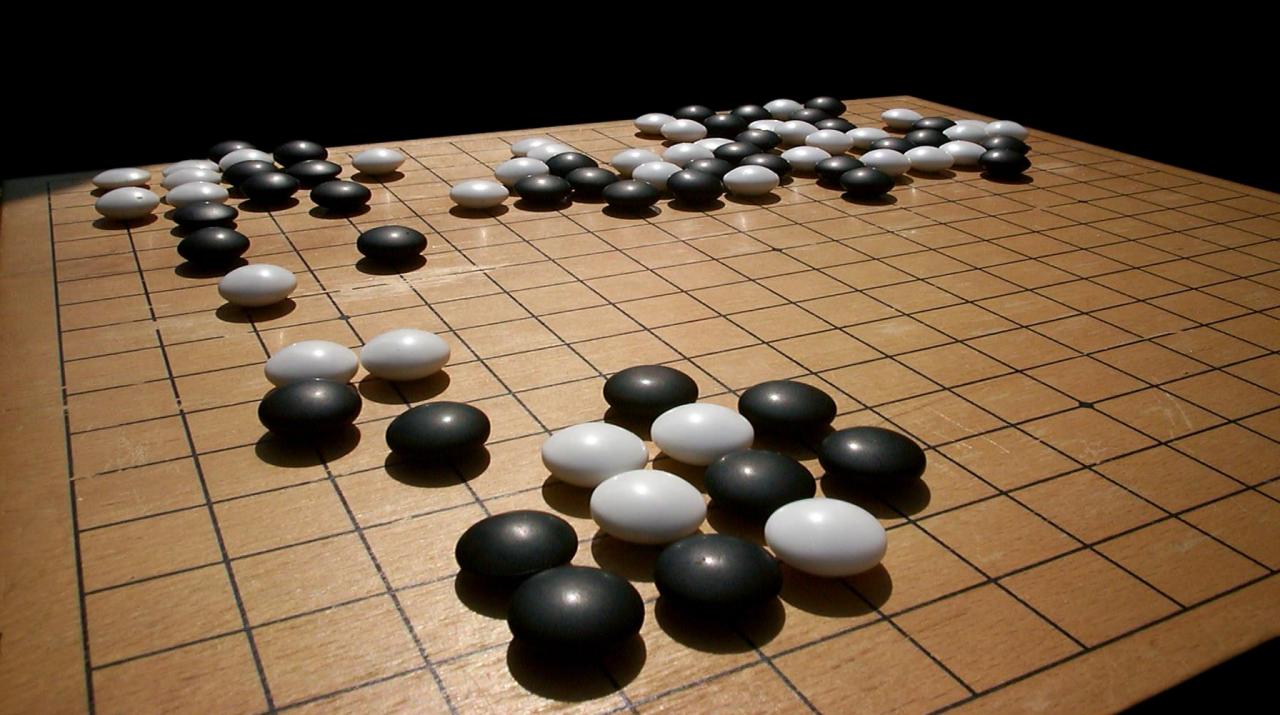


Source: Boston Dynamics











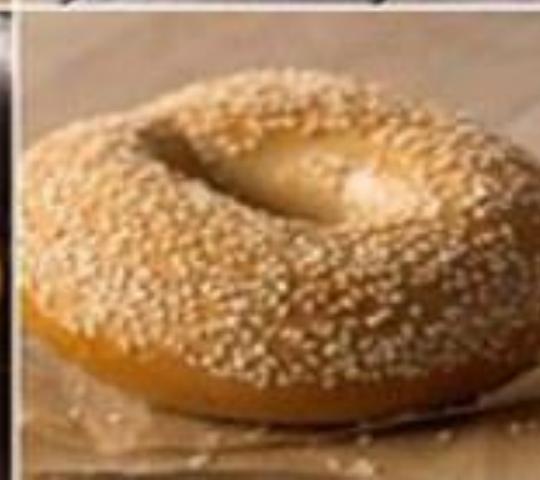
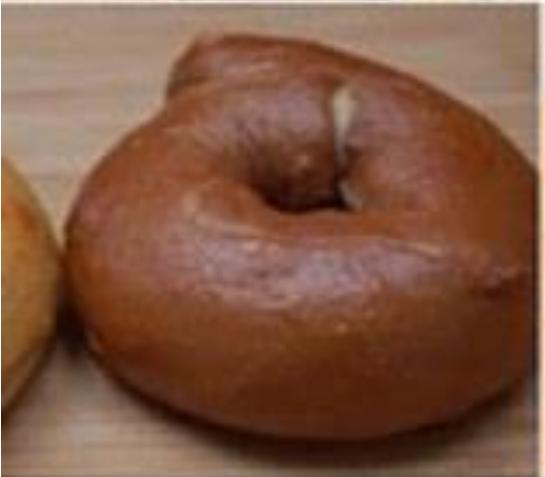


CAUTION





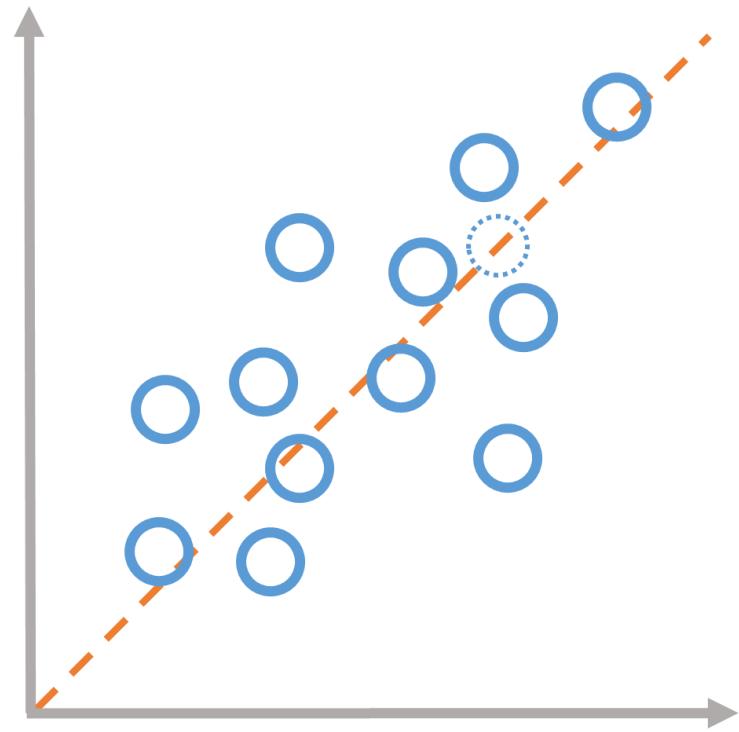
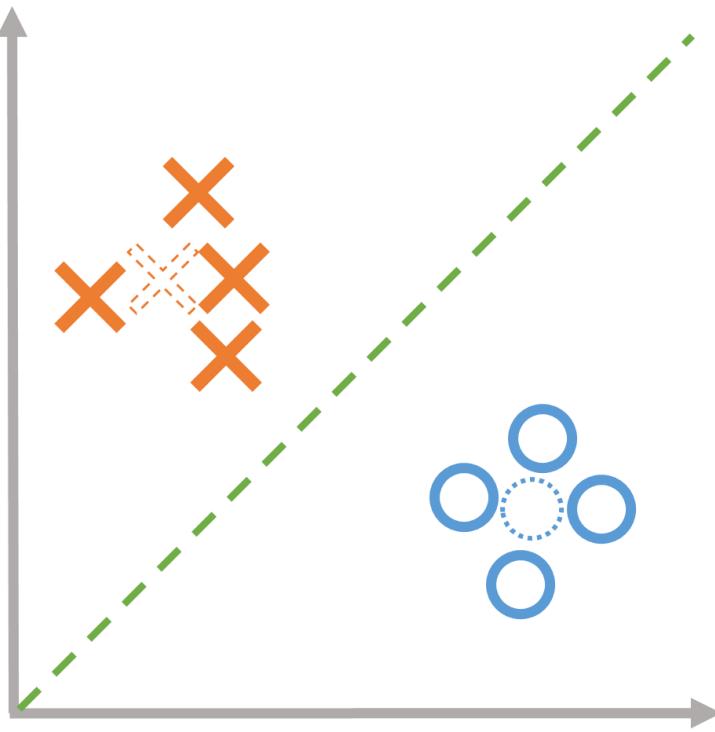
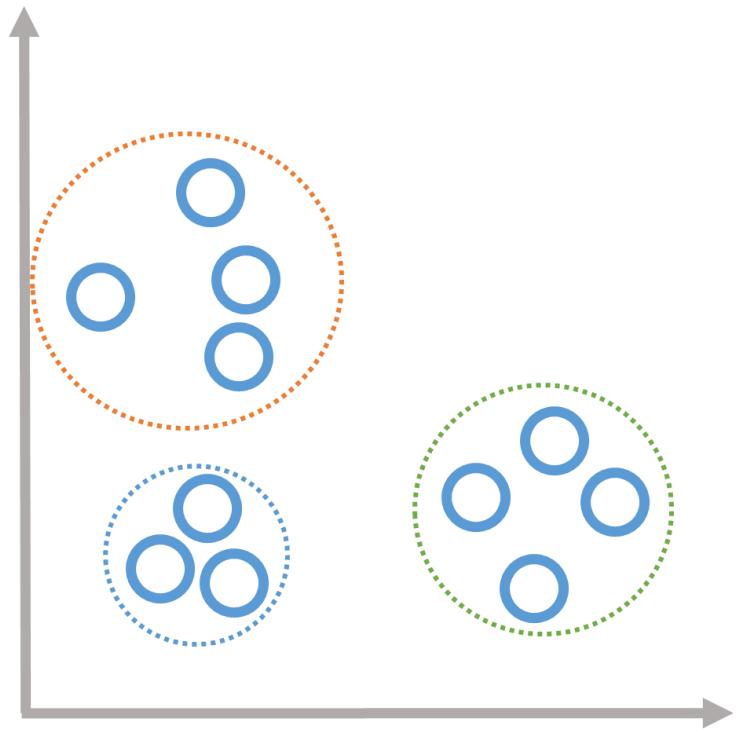


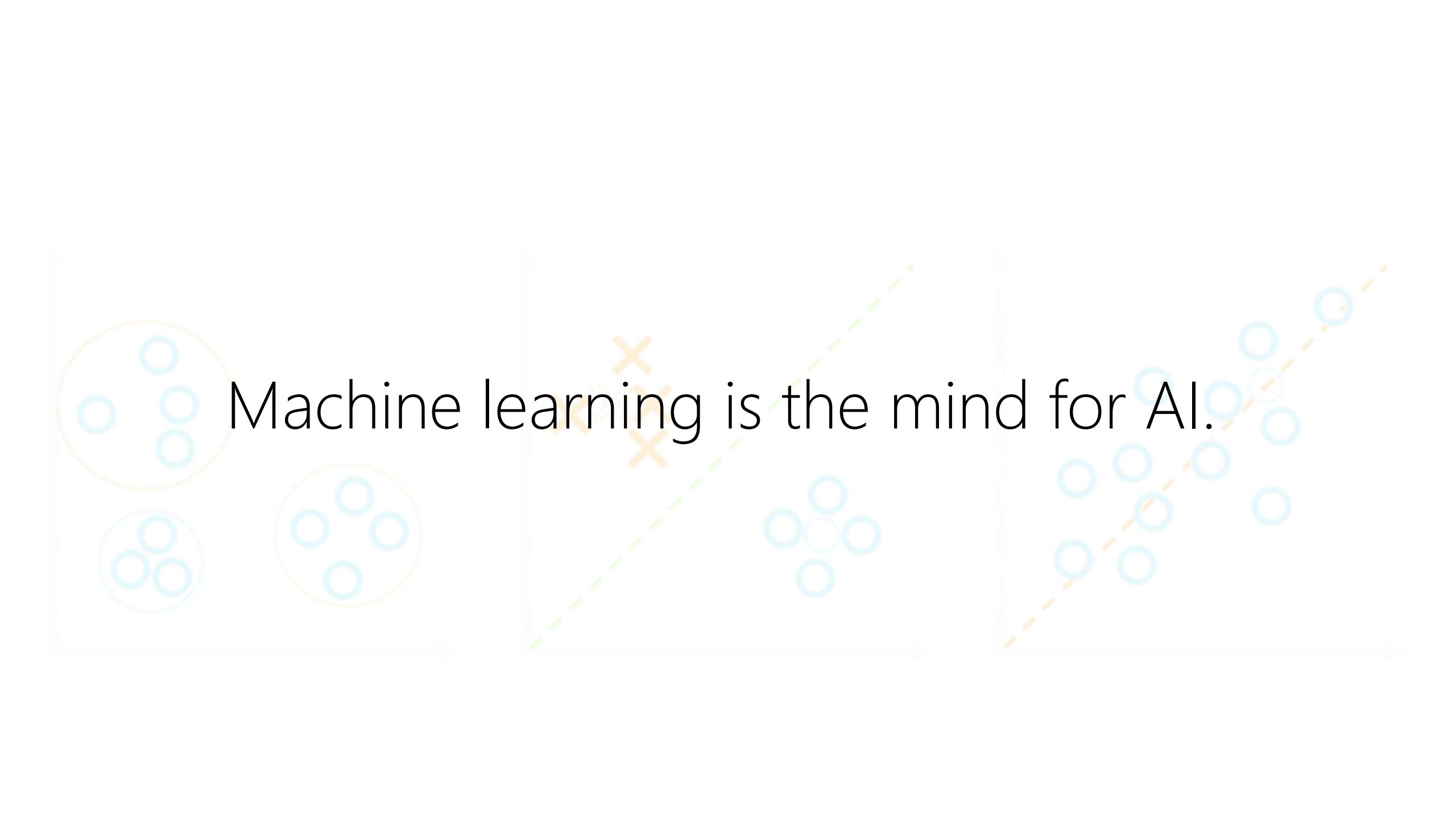




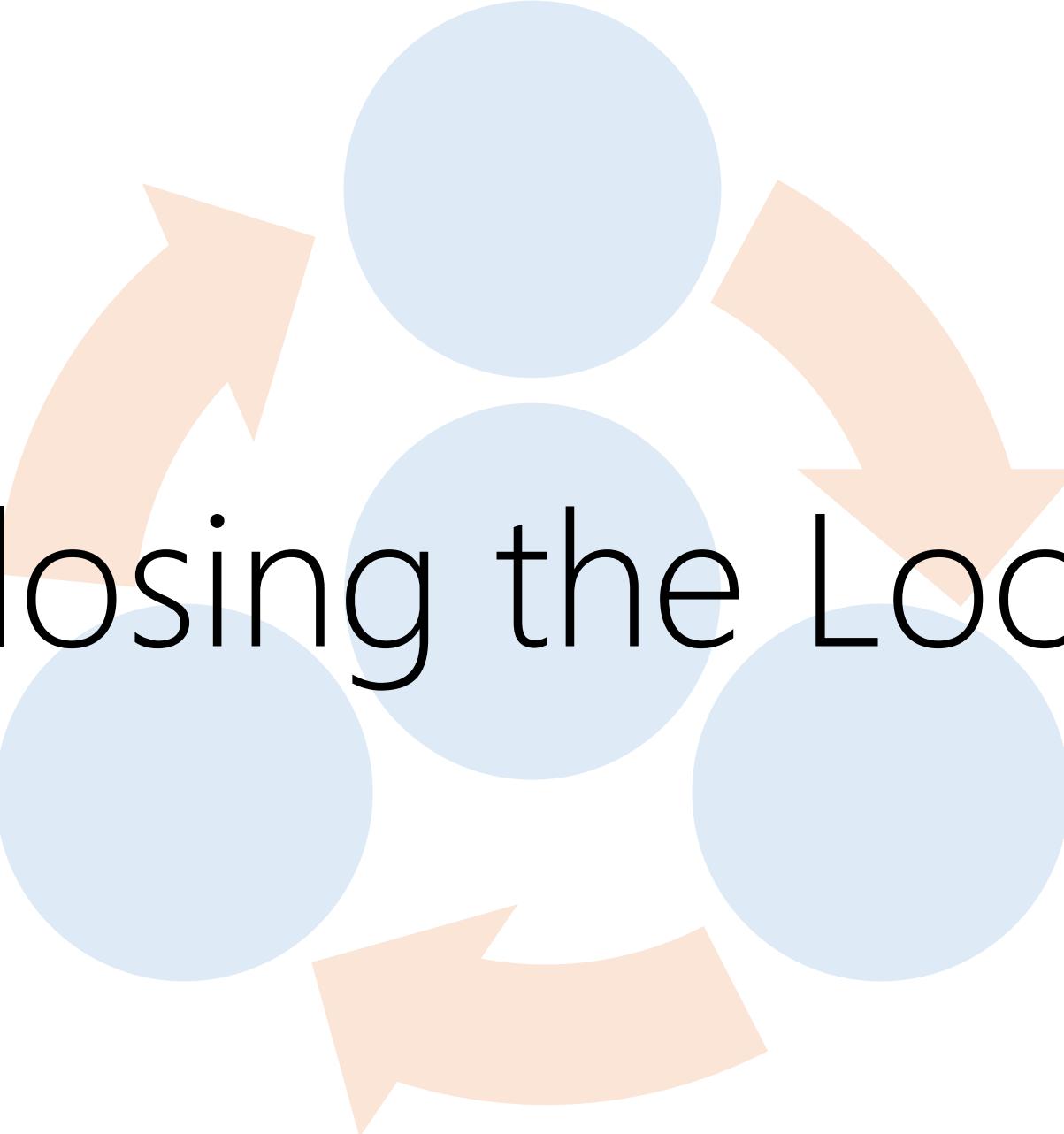


Source: Pouff - Grocery Trip

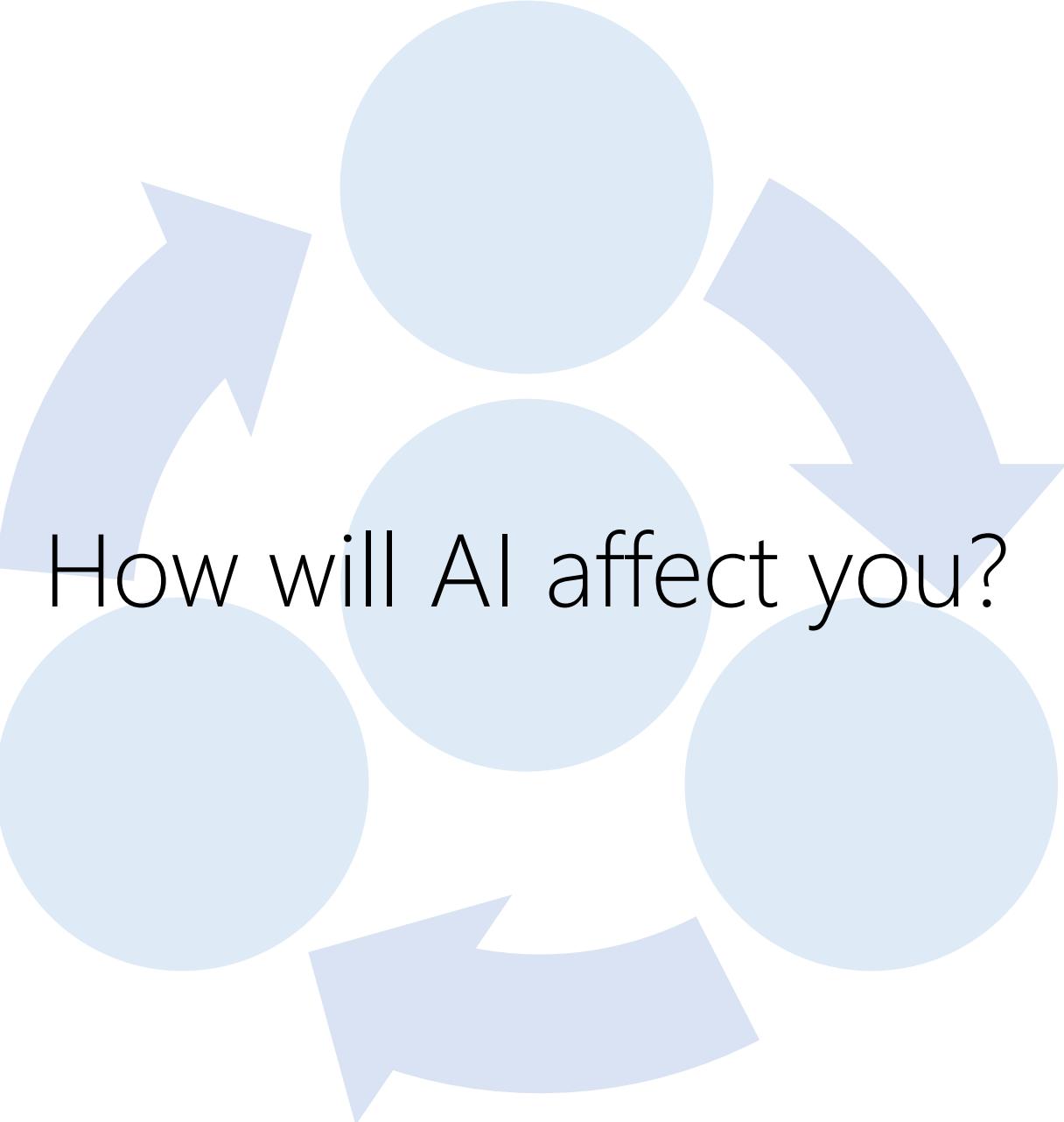


The background features a minimalist abstract design. It consists of several light blue circles of varying sizes scattered across the frame, some enclosed within larger colored circles (yellow, green, orange). Dashed lines in matching colors (yellow, green, orange) connect these circles in a non-linear, branching pattern, suggesting a network or flow. A single orange 'X' mark is positioned near the top center.

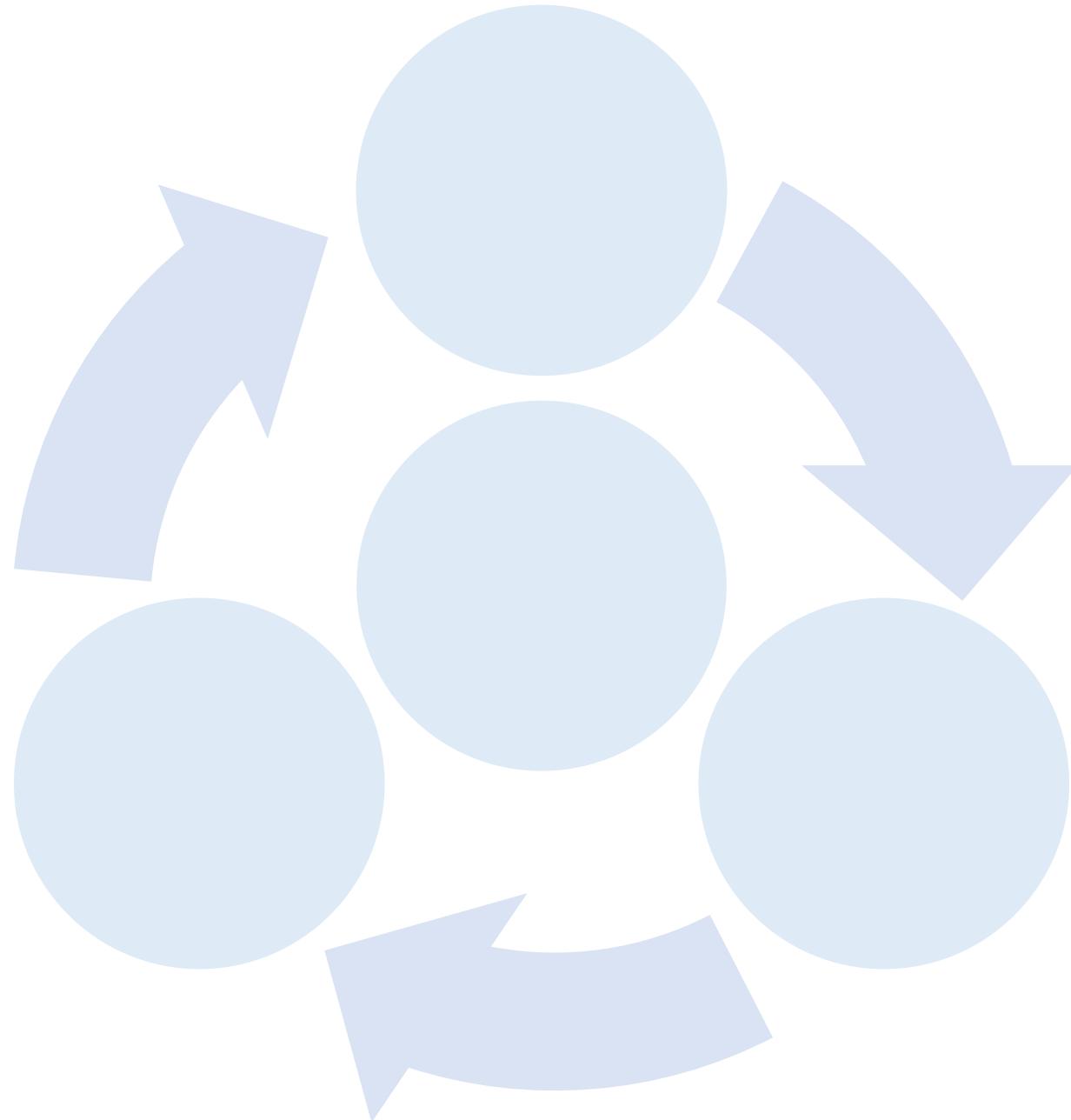
Machine learning is the mind for AI.



Closing the Loop

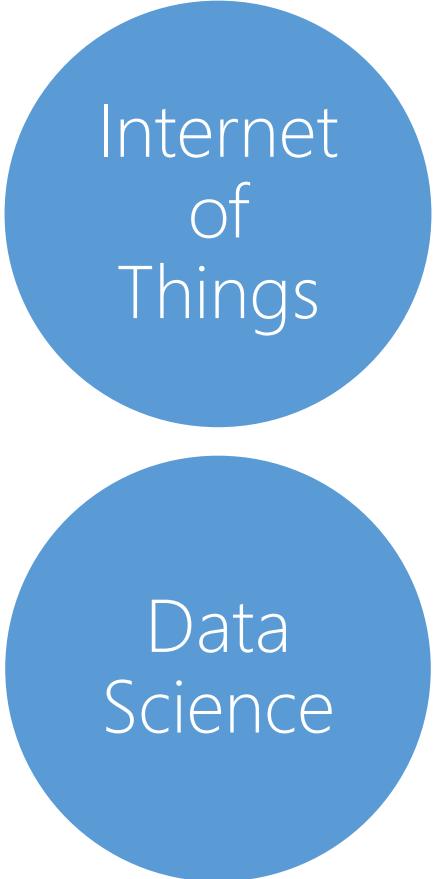


How will AI affect you?



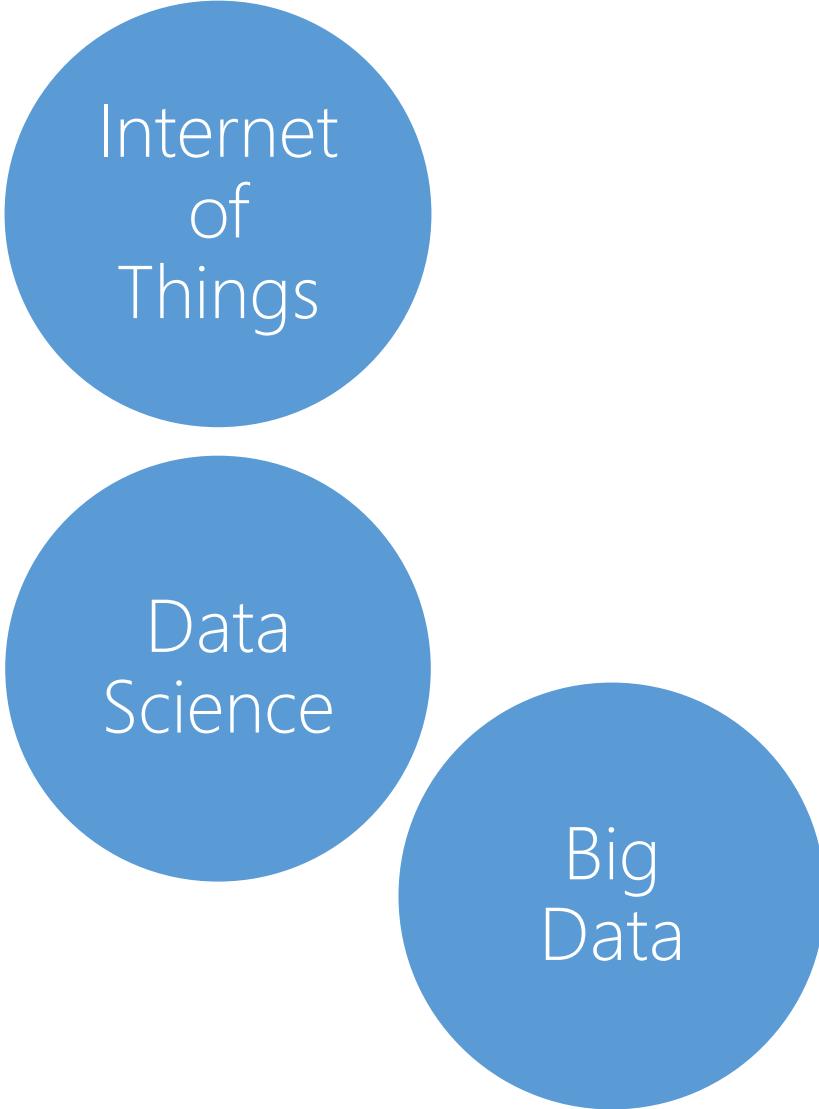


Data
Science



Internet
of
Things

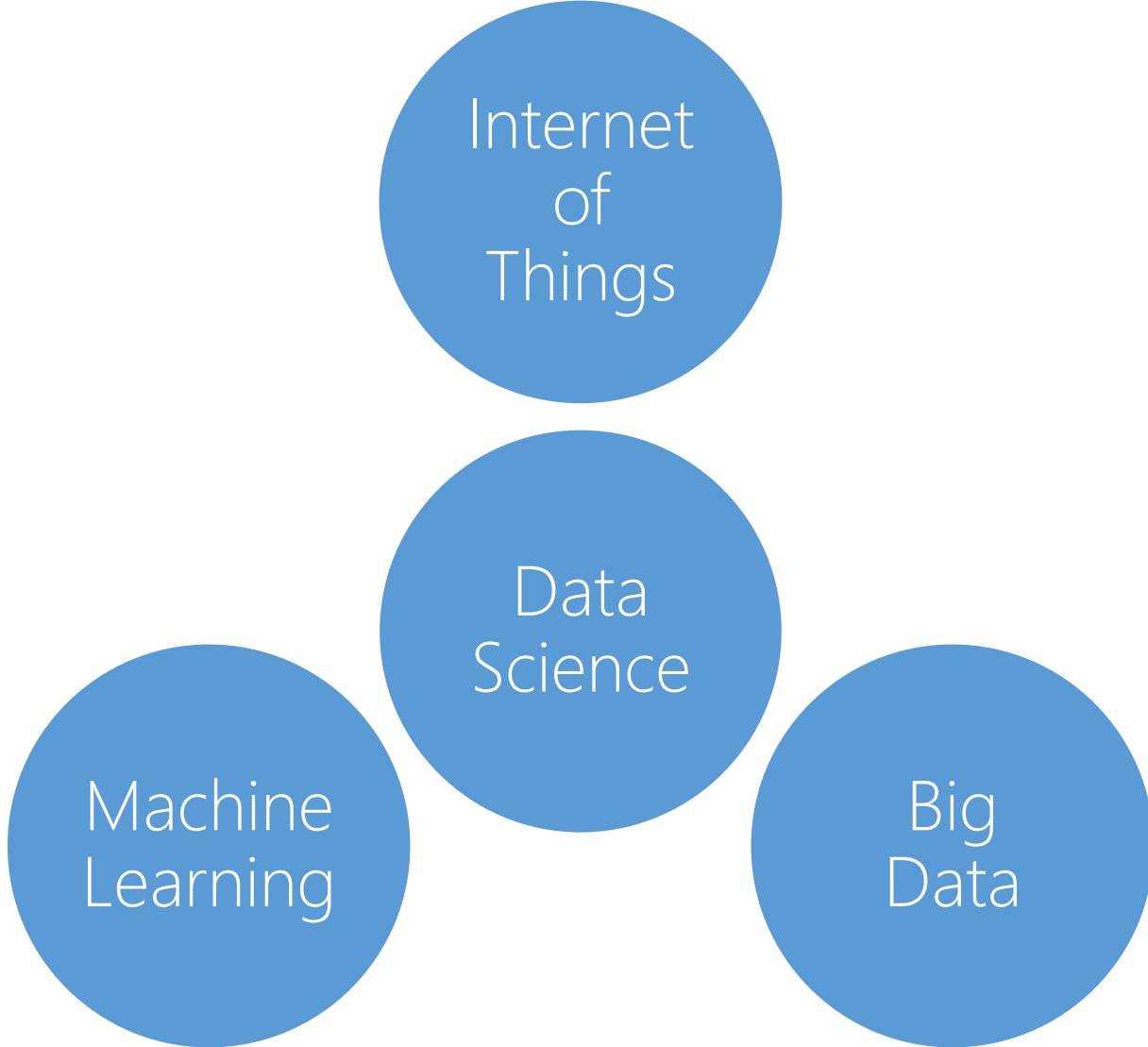
Data
Science



Internet
of
Things

Data
Science

Big
Data

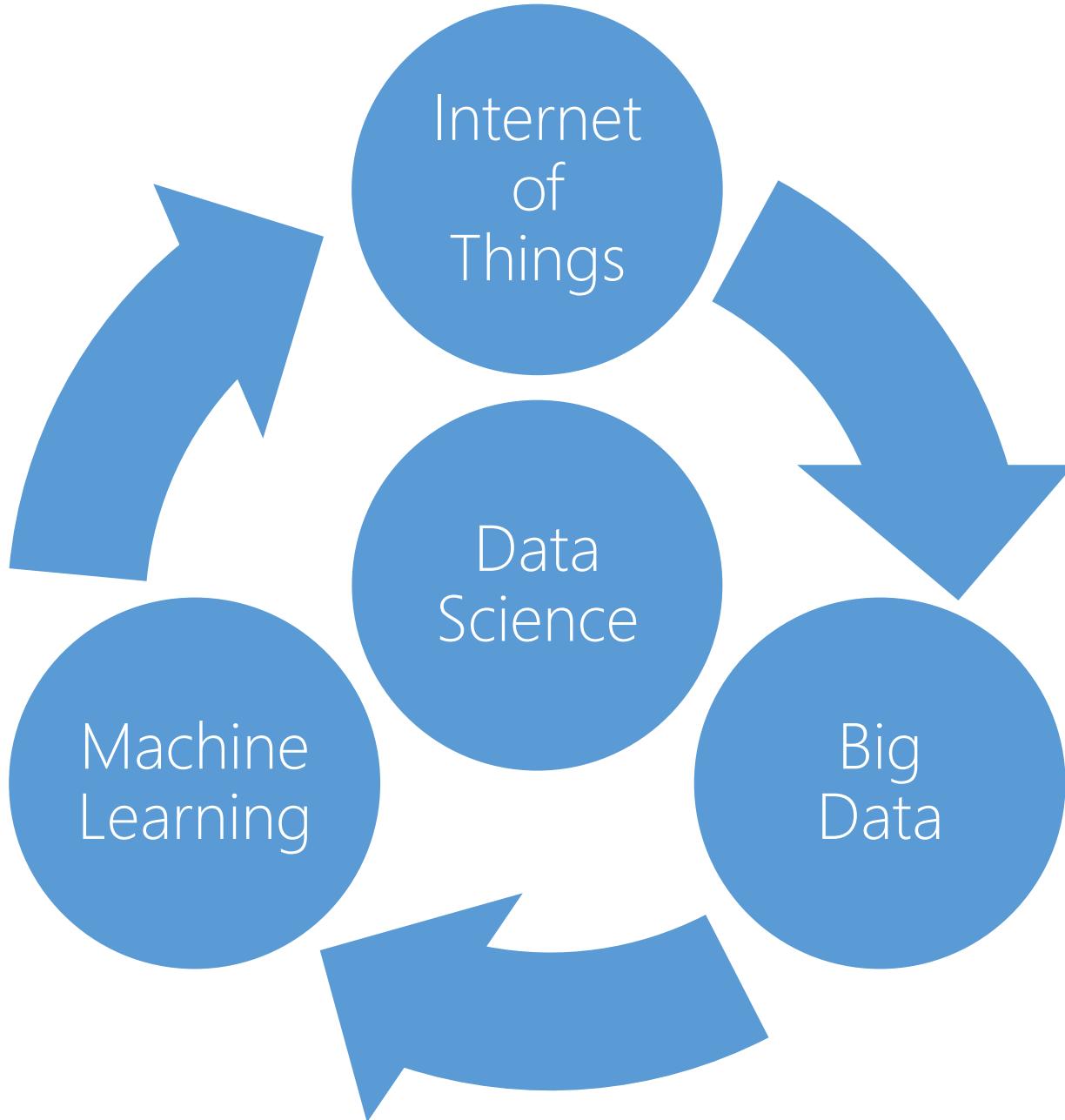


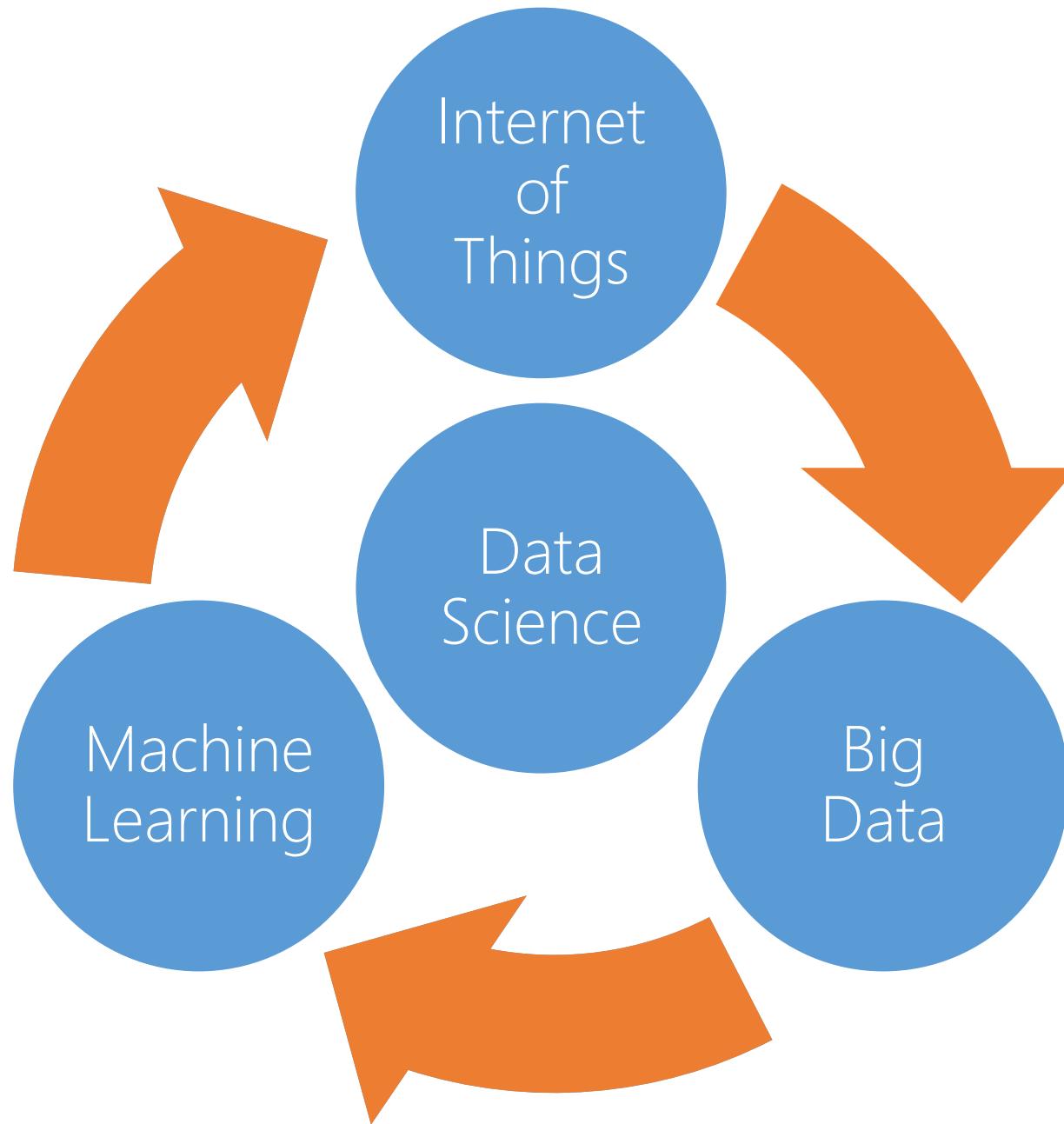
Internet
of
Things

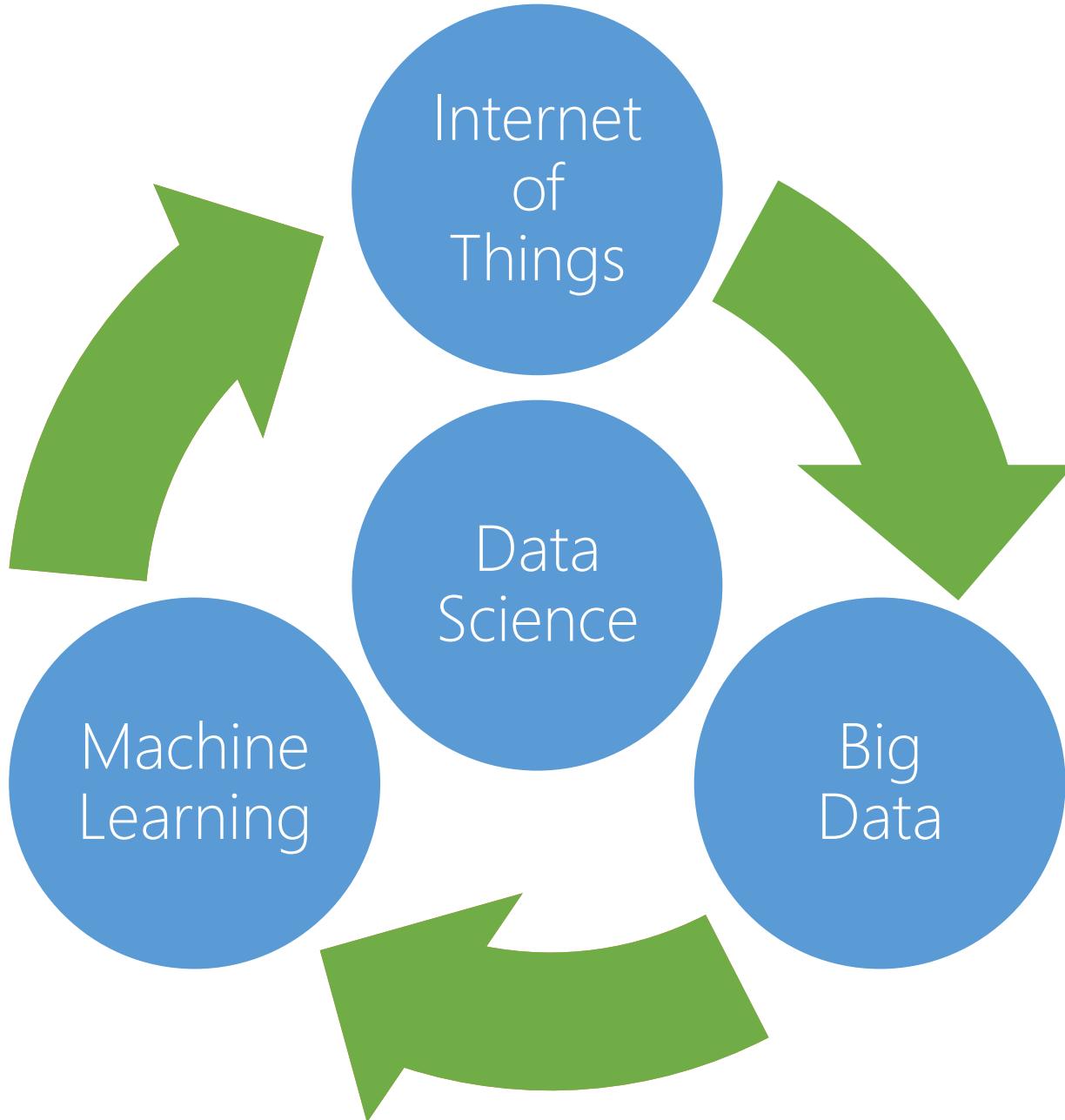
Data
Science

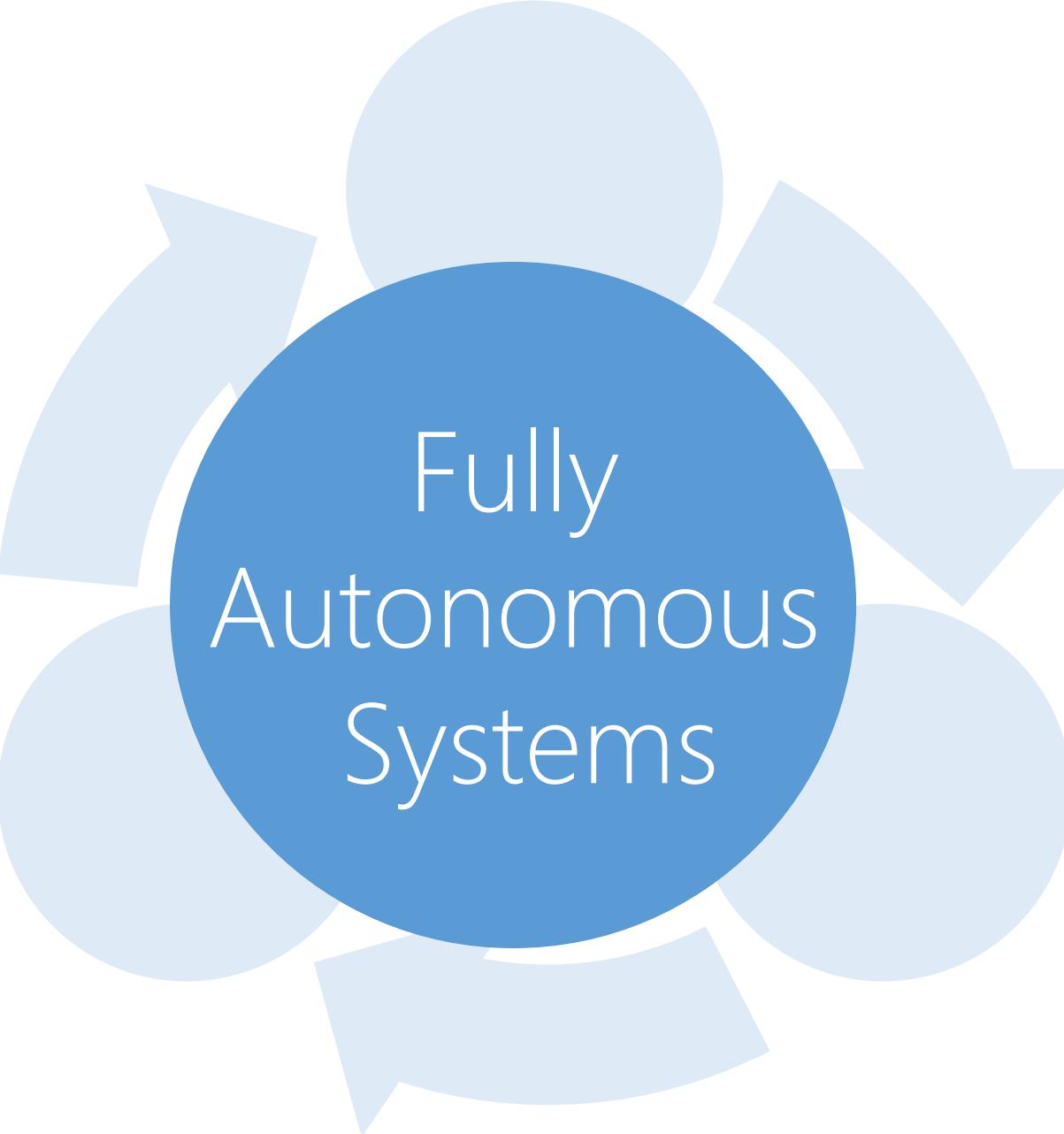
Machine
Learning

Big
Data

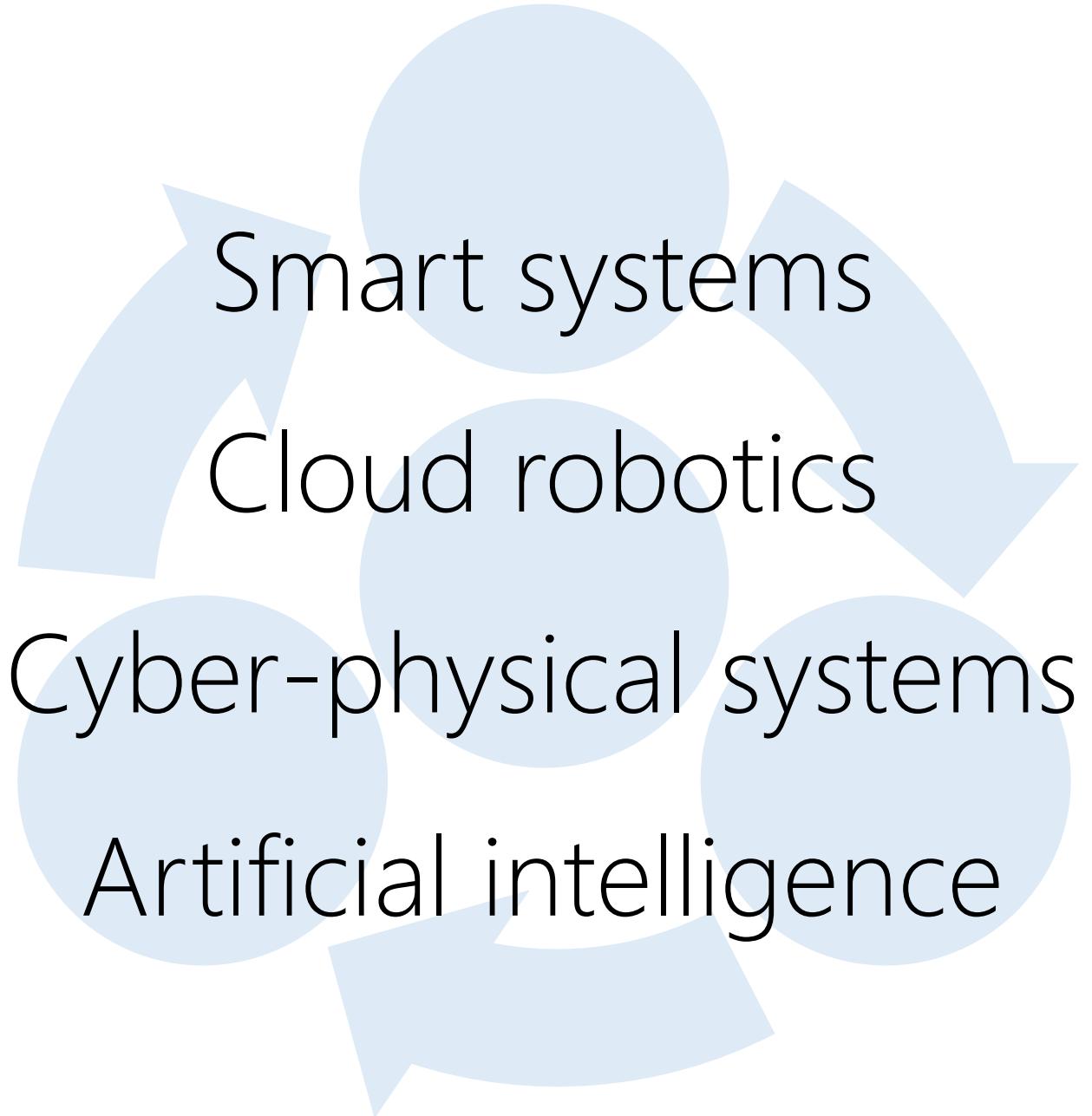


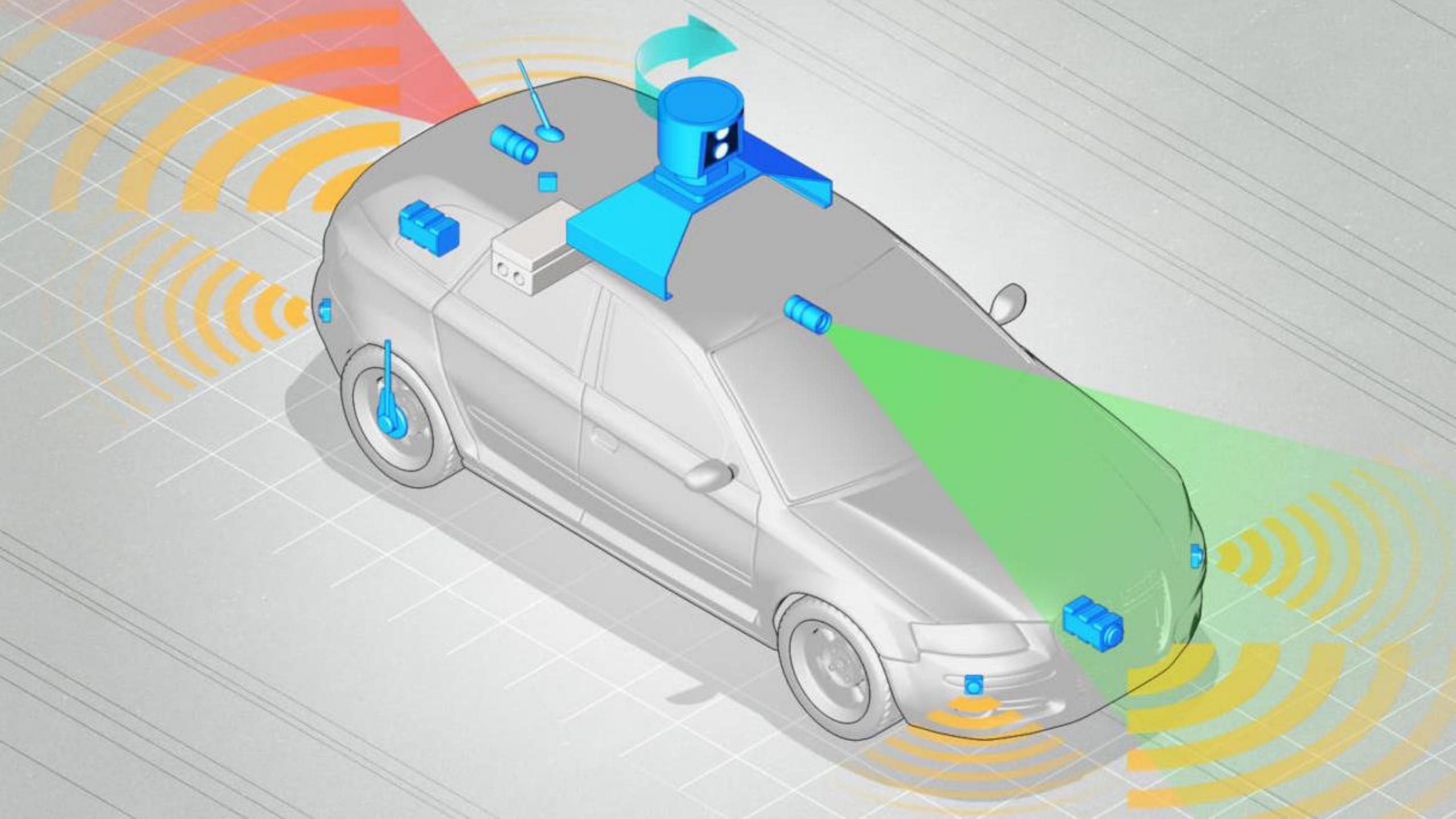


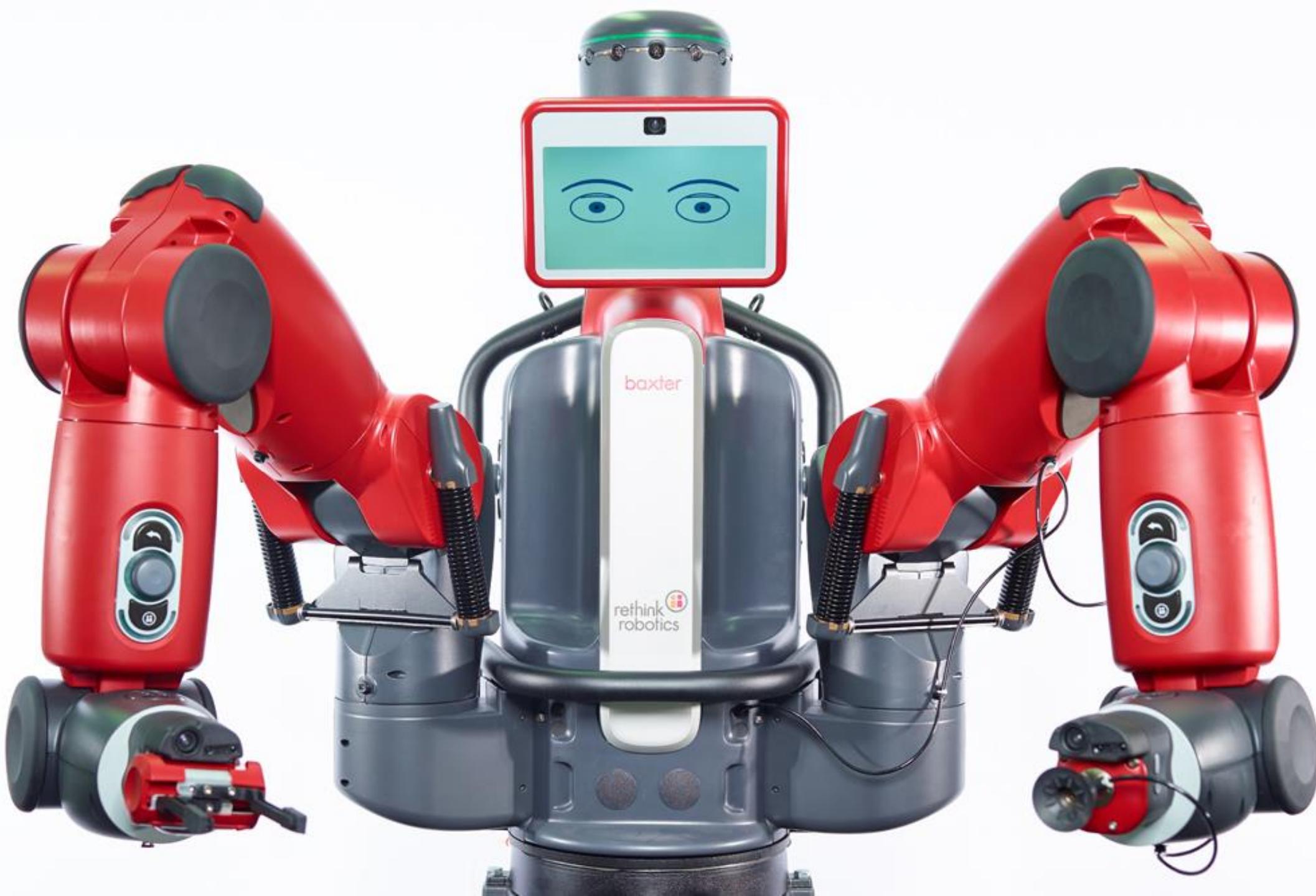




Fully
Autonomous
Systems











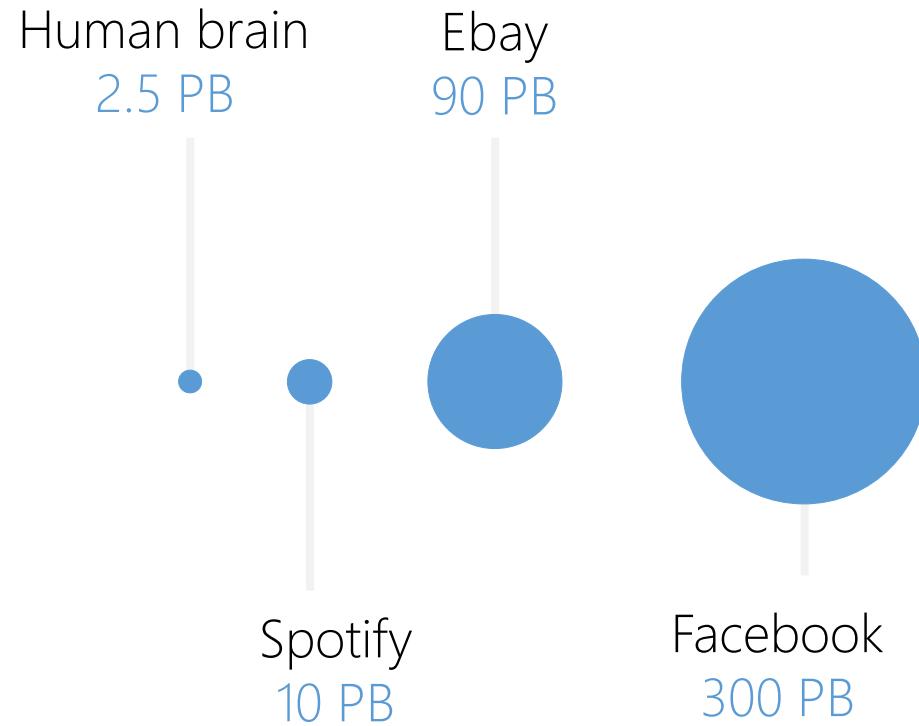


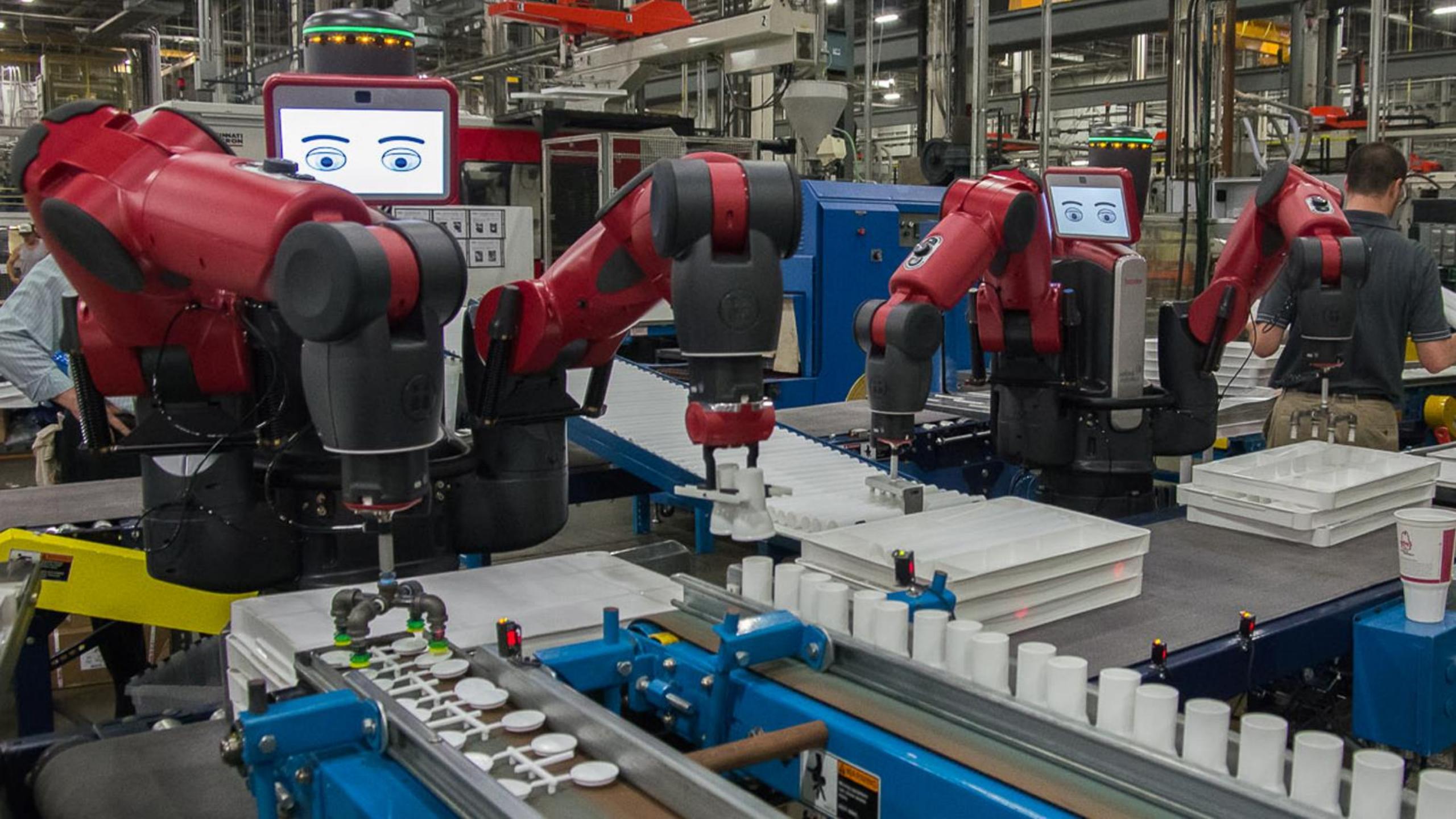
Artificial intelligence will be woven
into the fabric of our society.



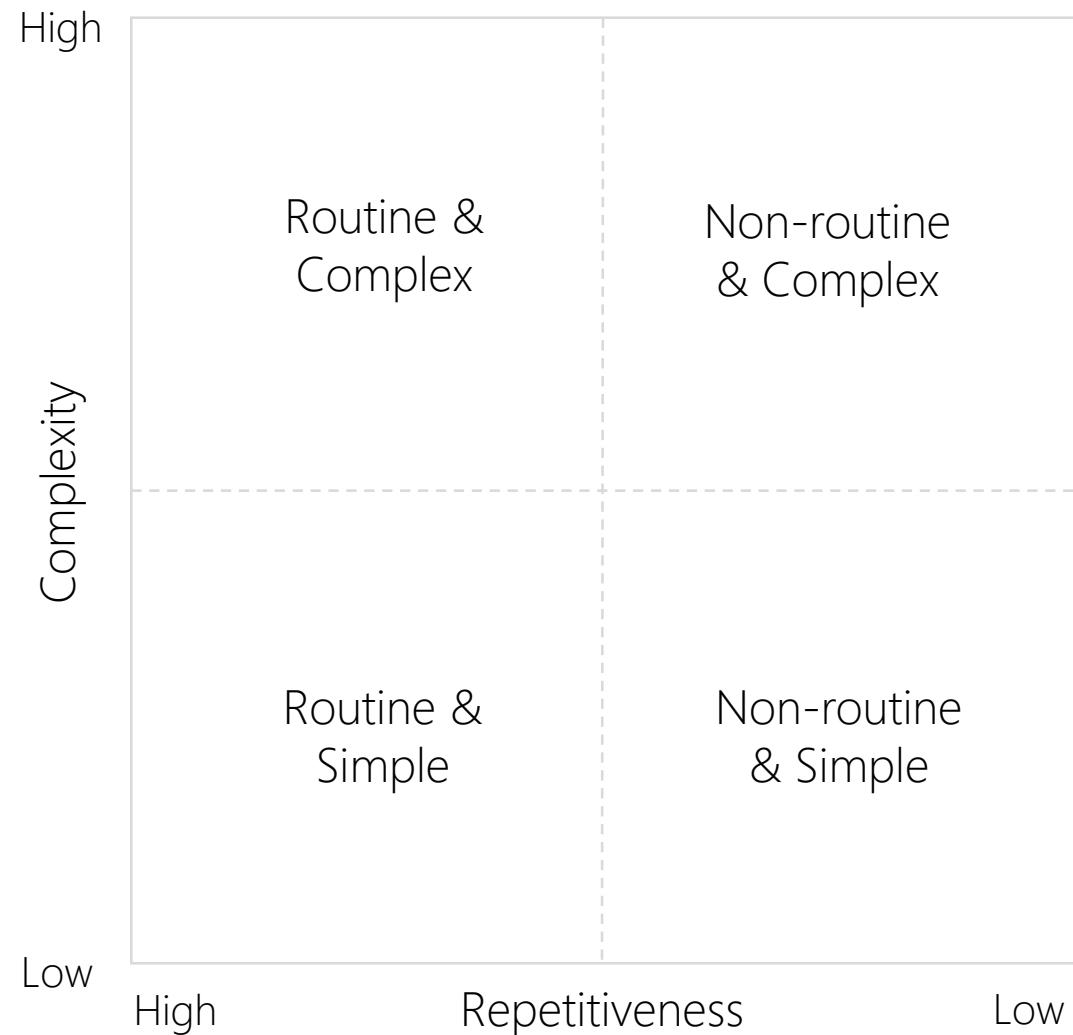
The Big Data Universe

Amount of data as of 2016 in petabytes

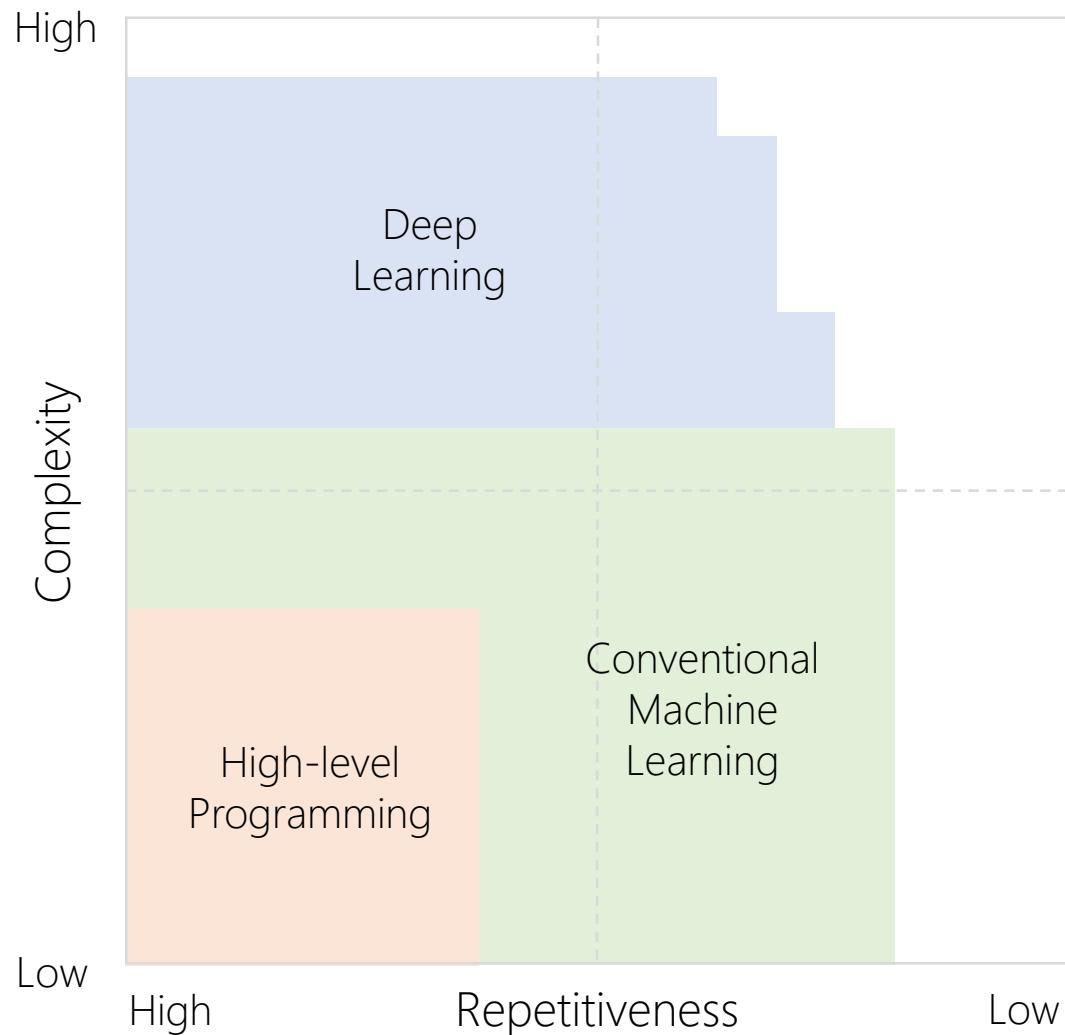




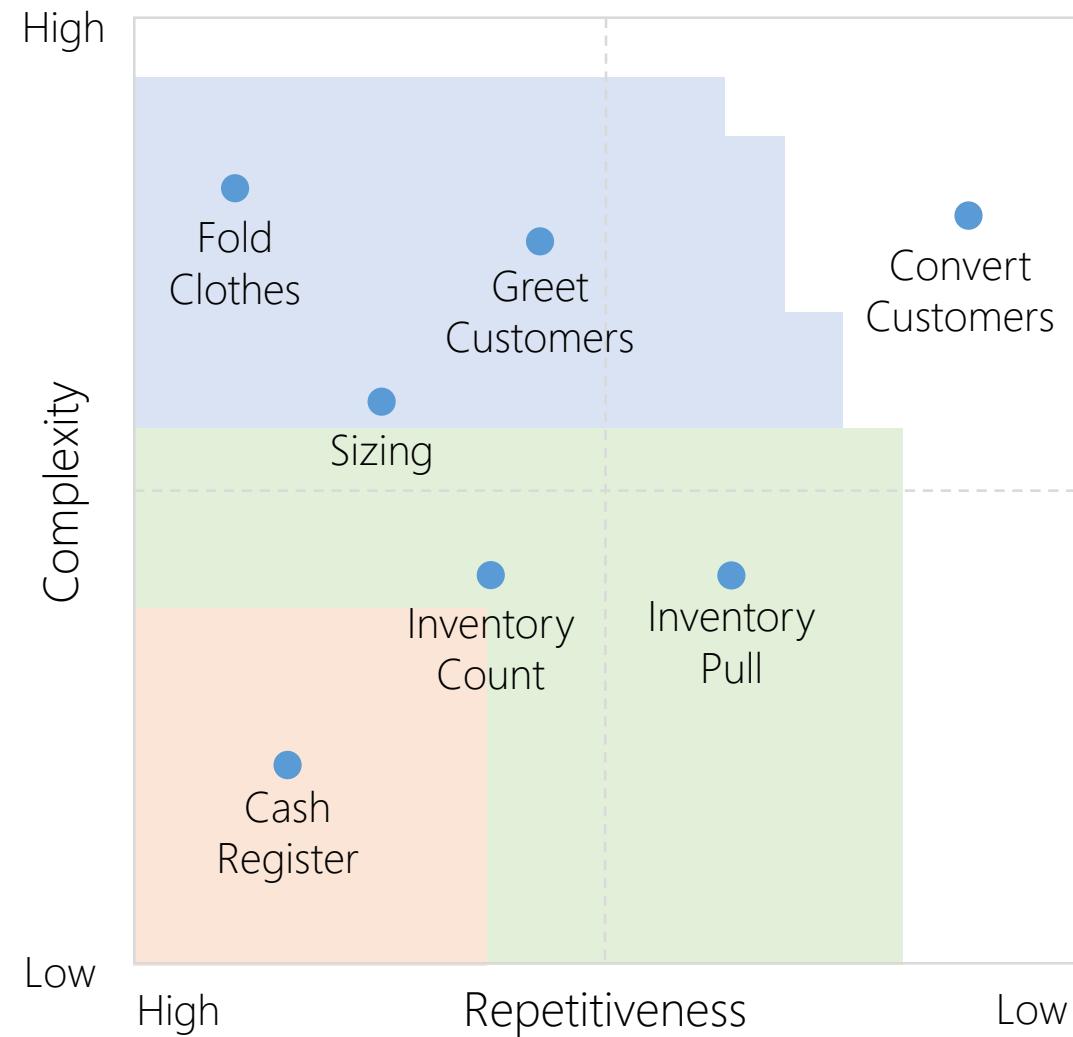
Automation Framework



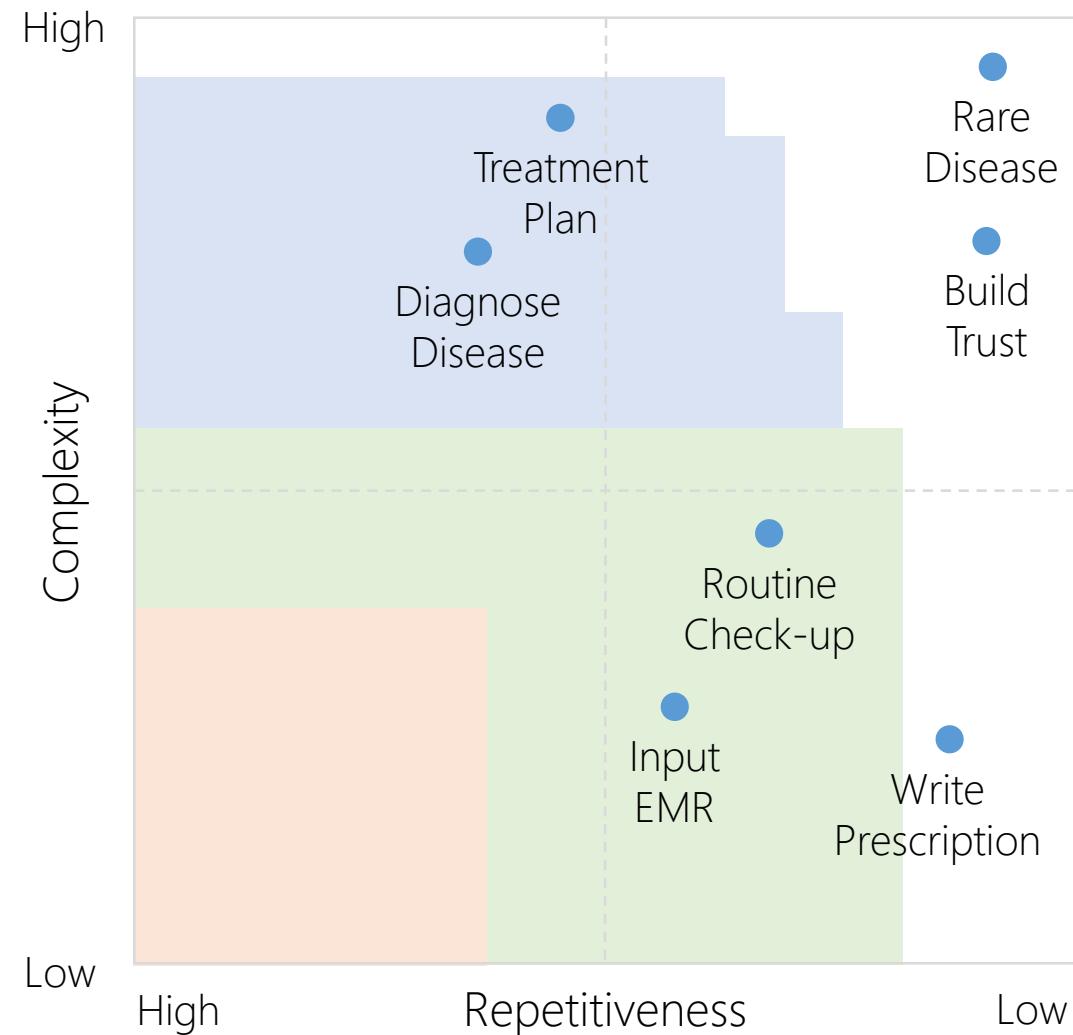
Automation Technology



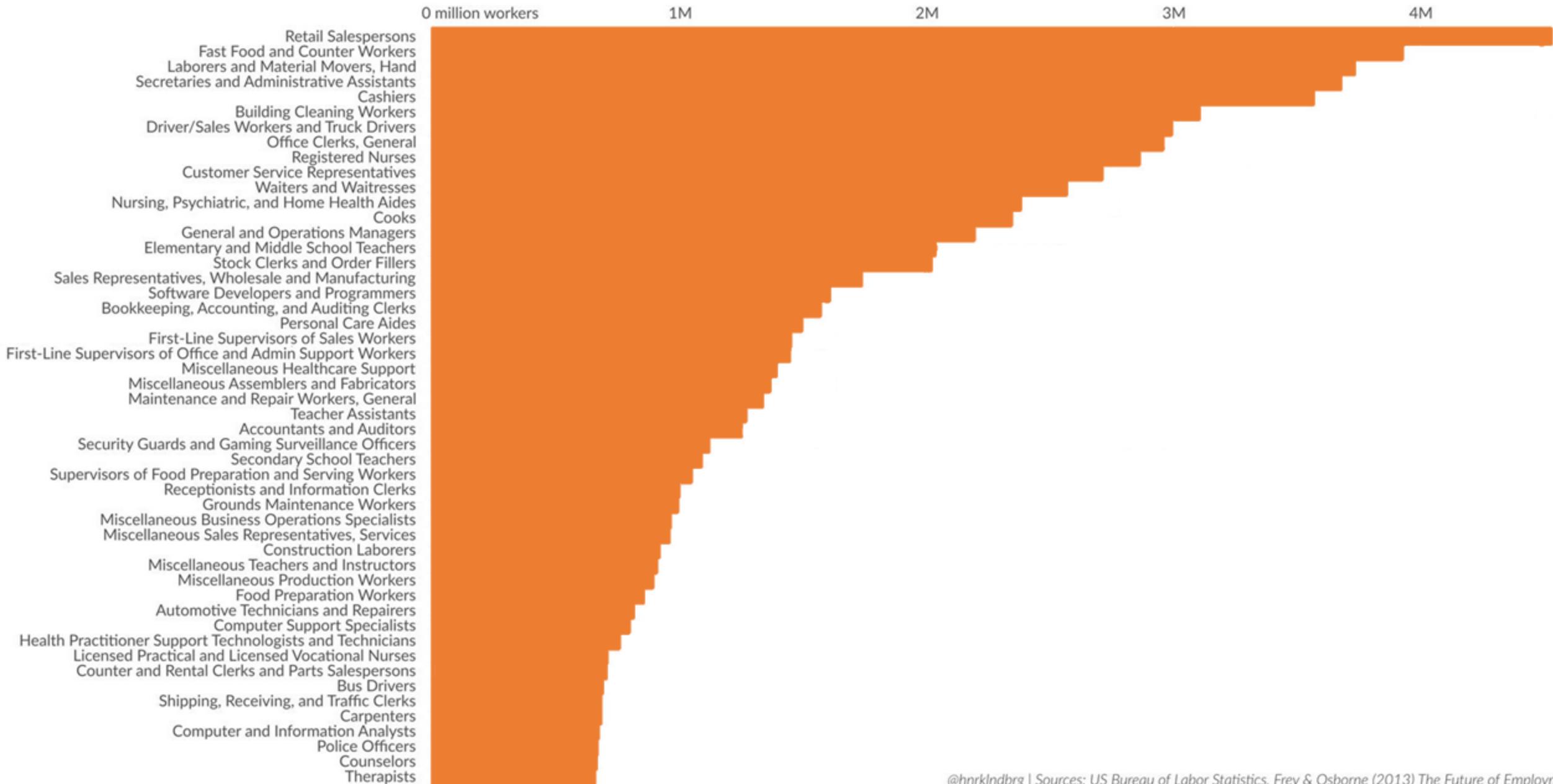
Retail Salesperson



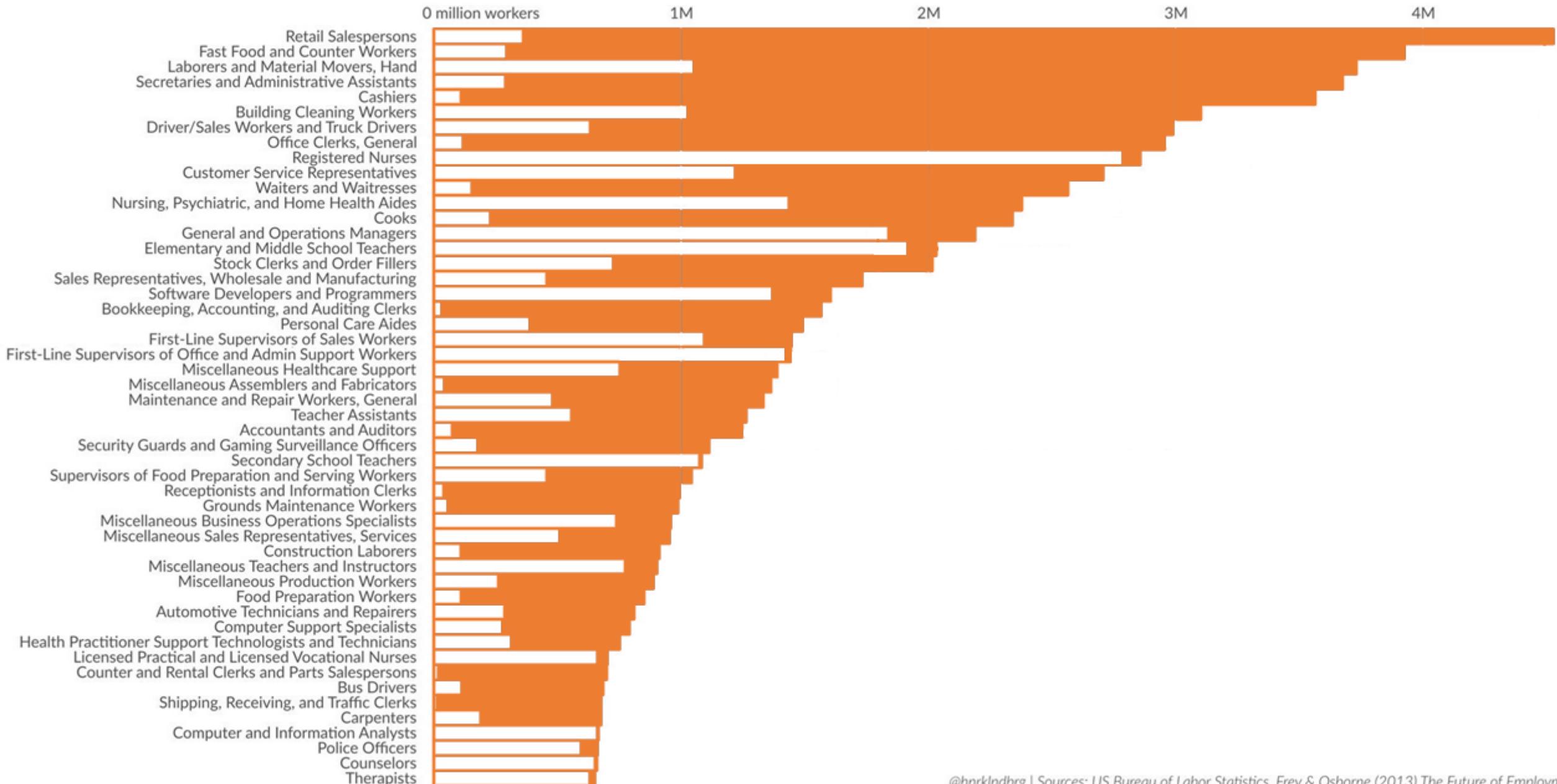
Medical Doctor



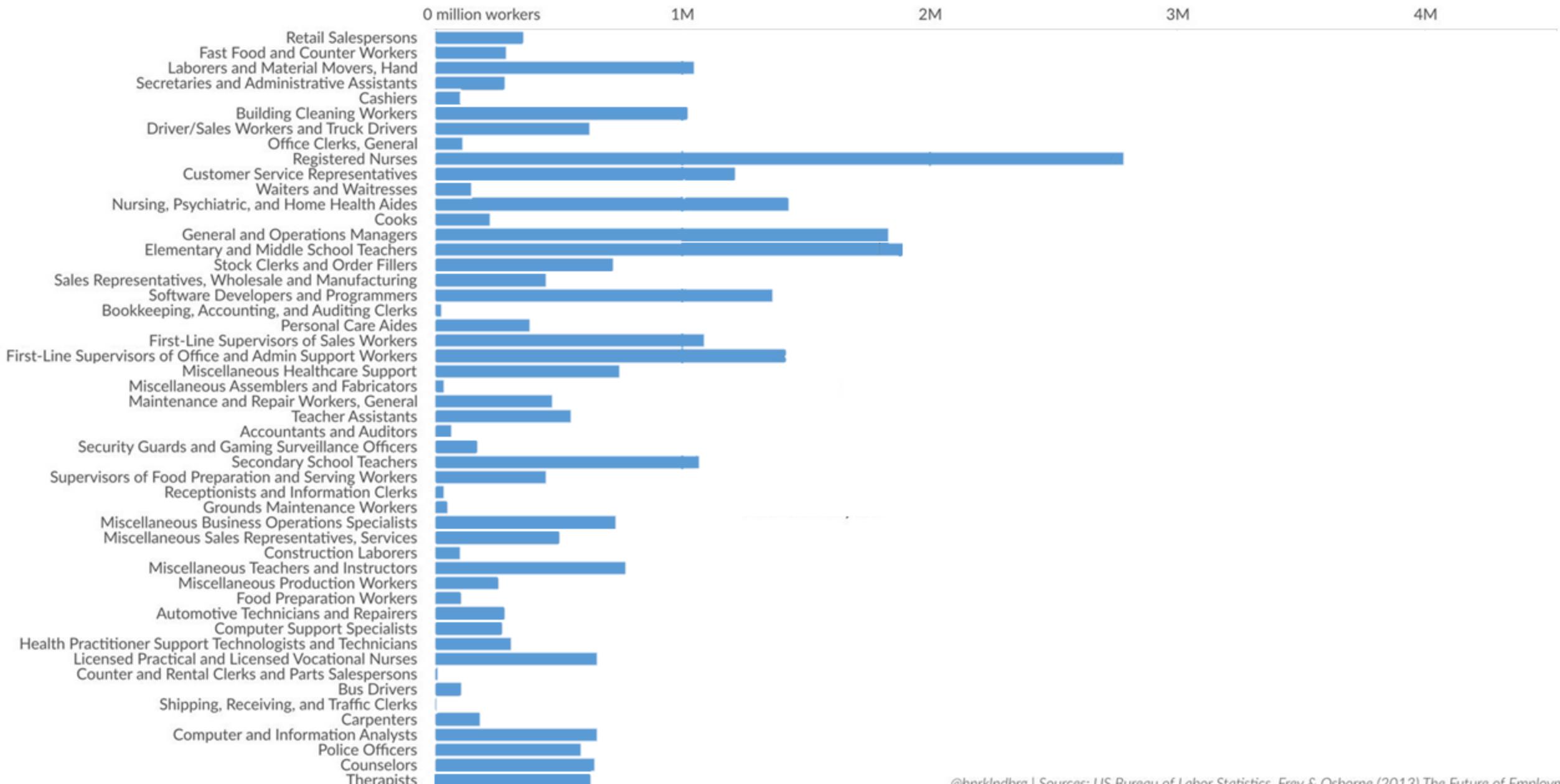
The Future of Labor



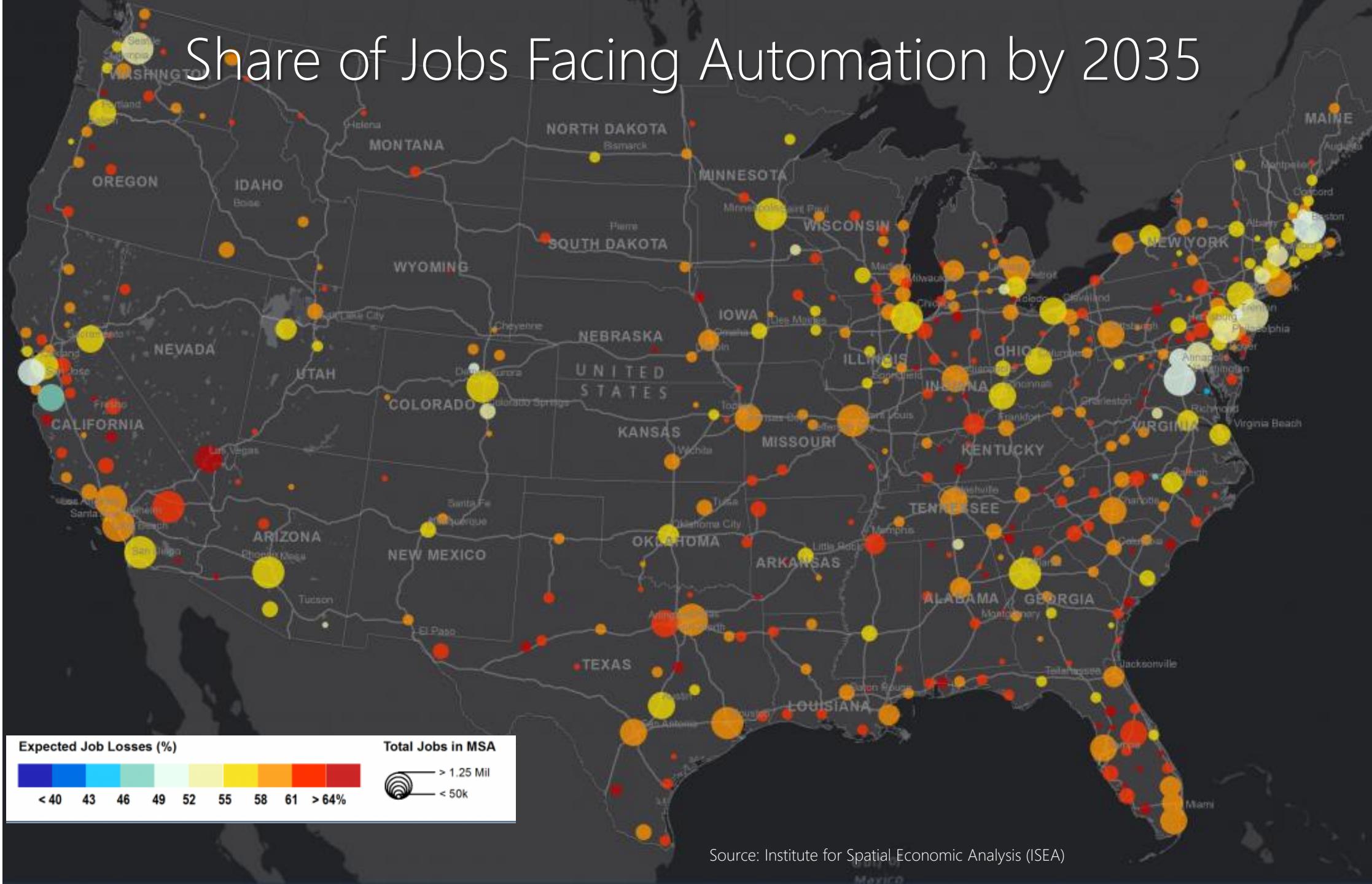
The Future of Labor

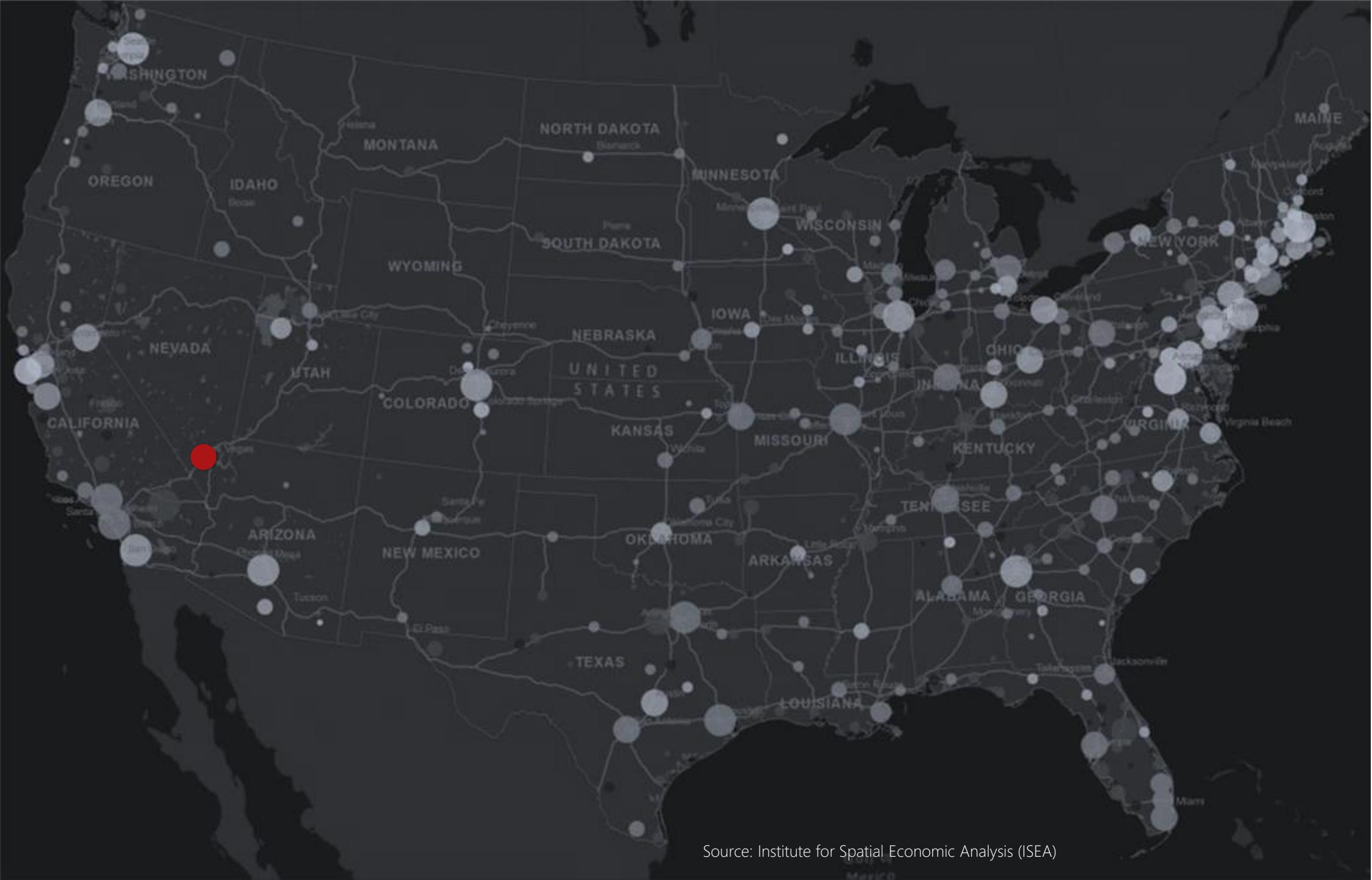


The Future of Labor

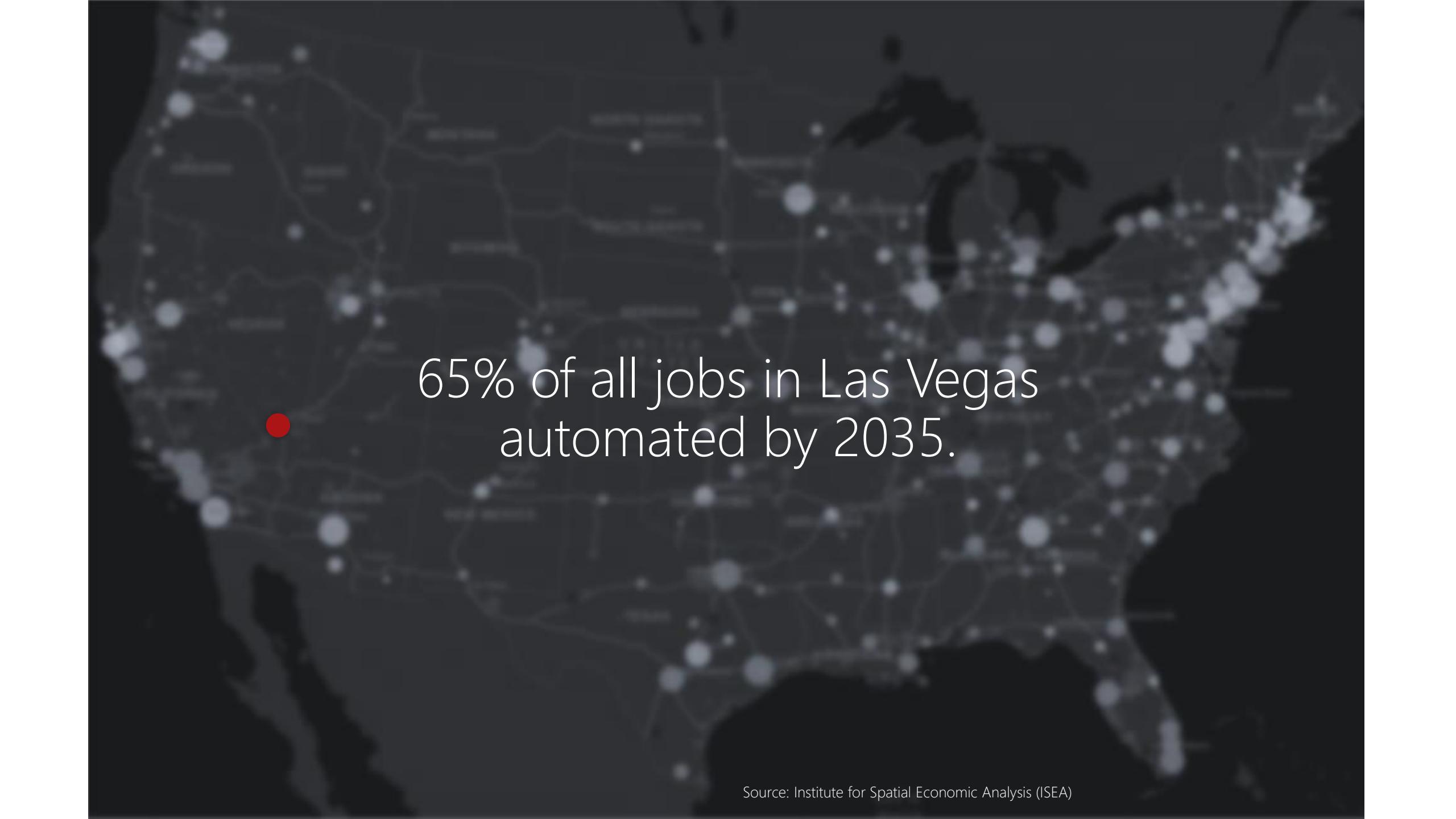


Share of Jobs Facing Automation by 2035





Source: Institute for Spatial Economic Analysis (ISEA)

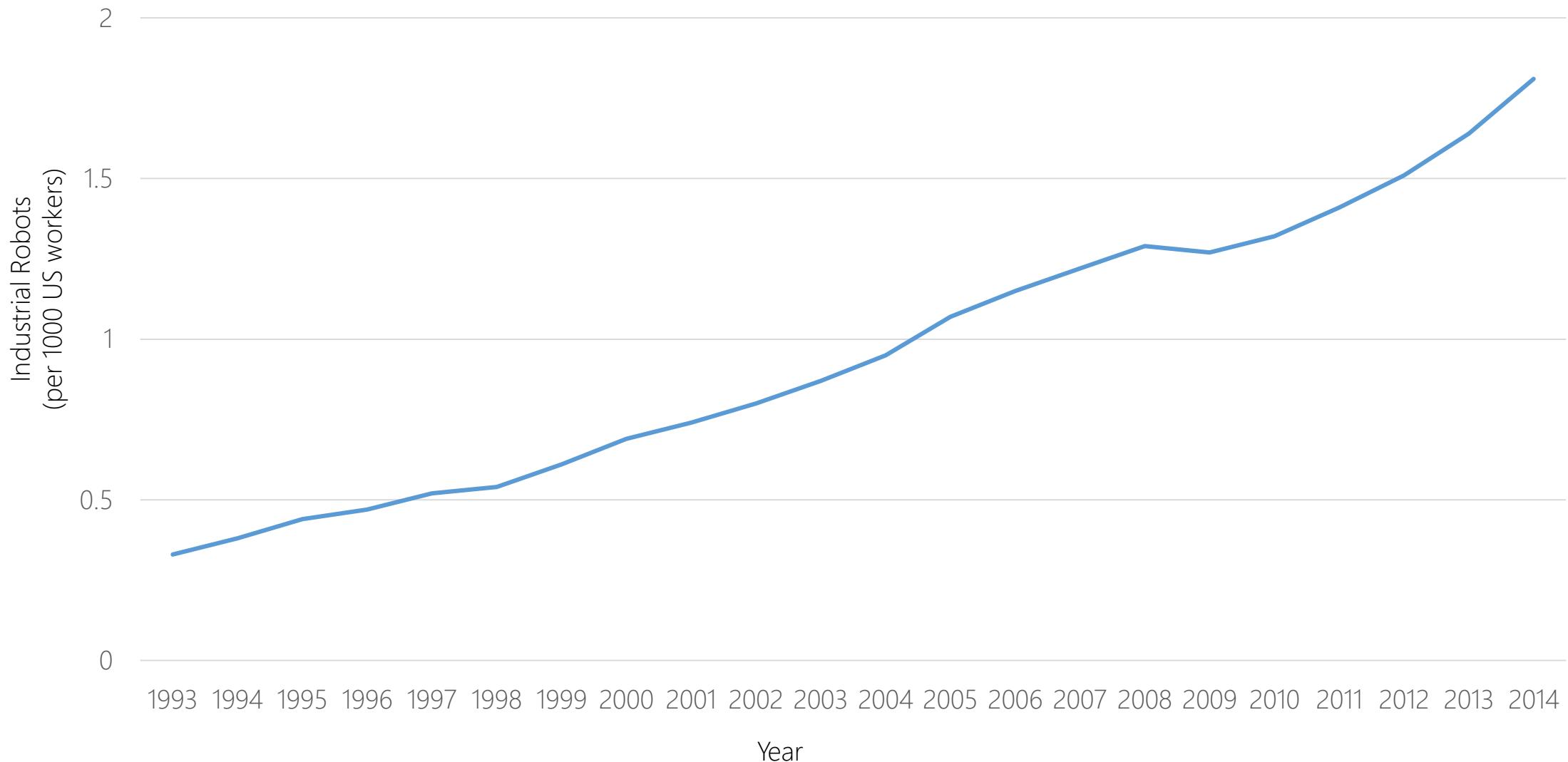


65% of all jobs in Las Vegas
automated by 2035.



Half of all jobs in USA at risk
in the next two decades.

Rise of the Robots



Source: International Federation of Robotics

Rise of the Robots

AI will amplify this trend



2000

2010

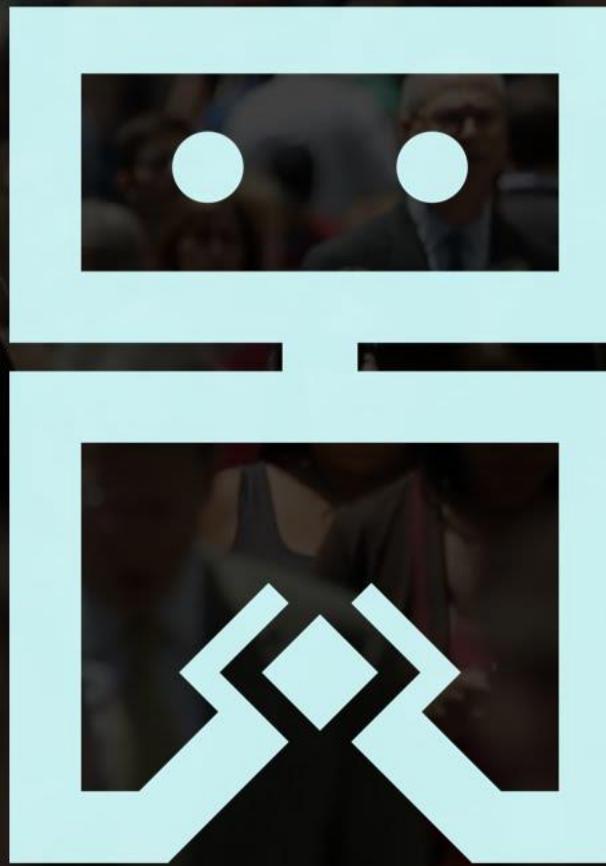
2020

2030 2040 2050 2060 2070 2080 2090 2100

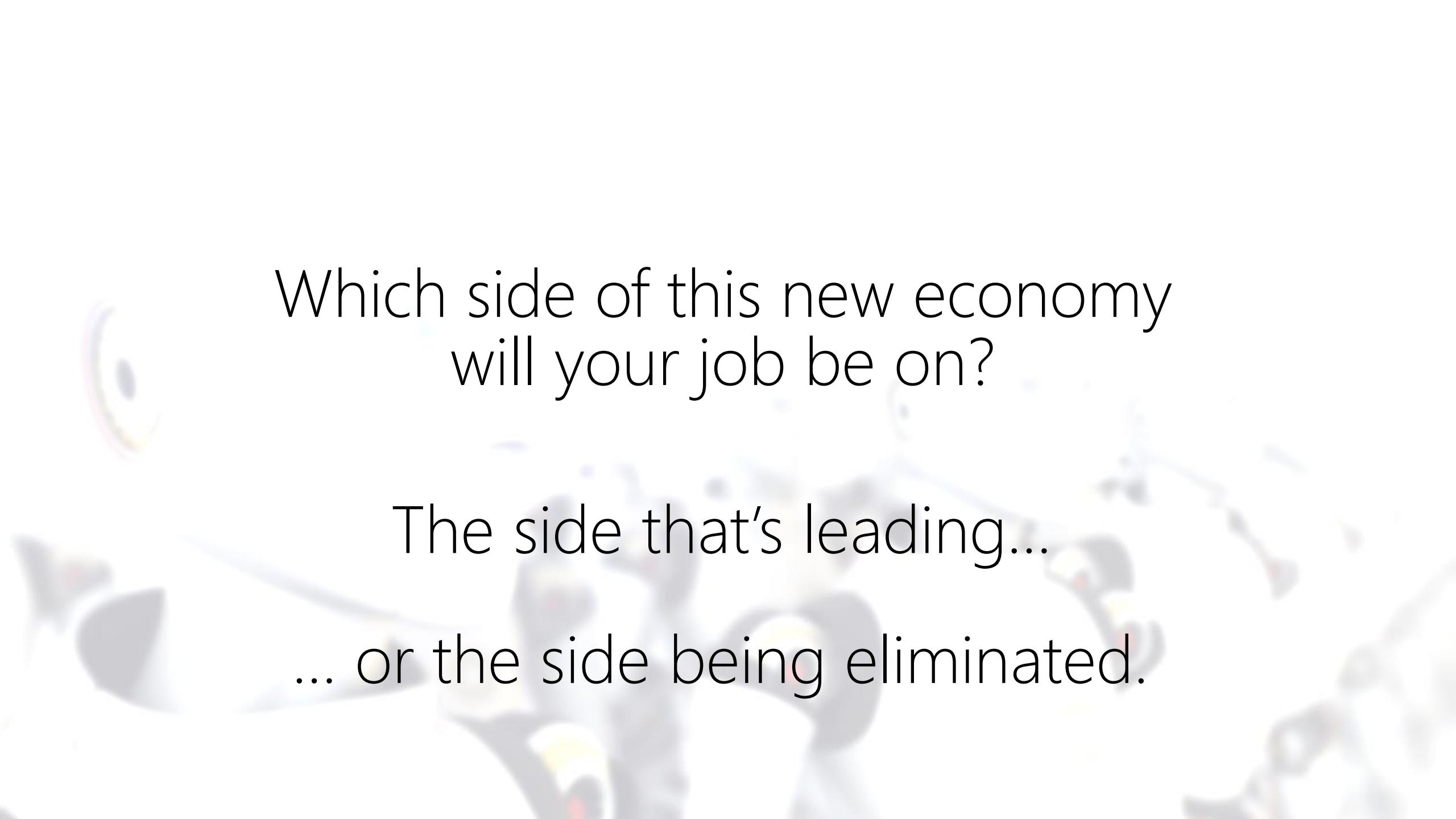
Source: McKinsey Global Institute



Humans Need Not Apply







Which side of this new economy
will your job be on?

The side that's leading...

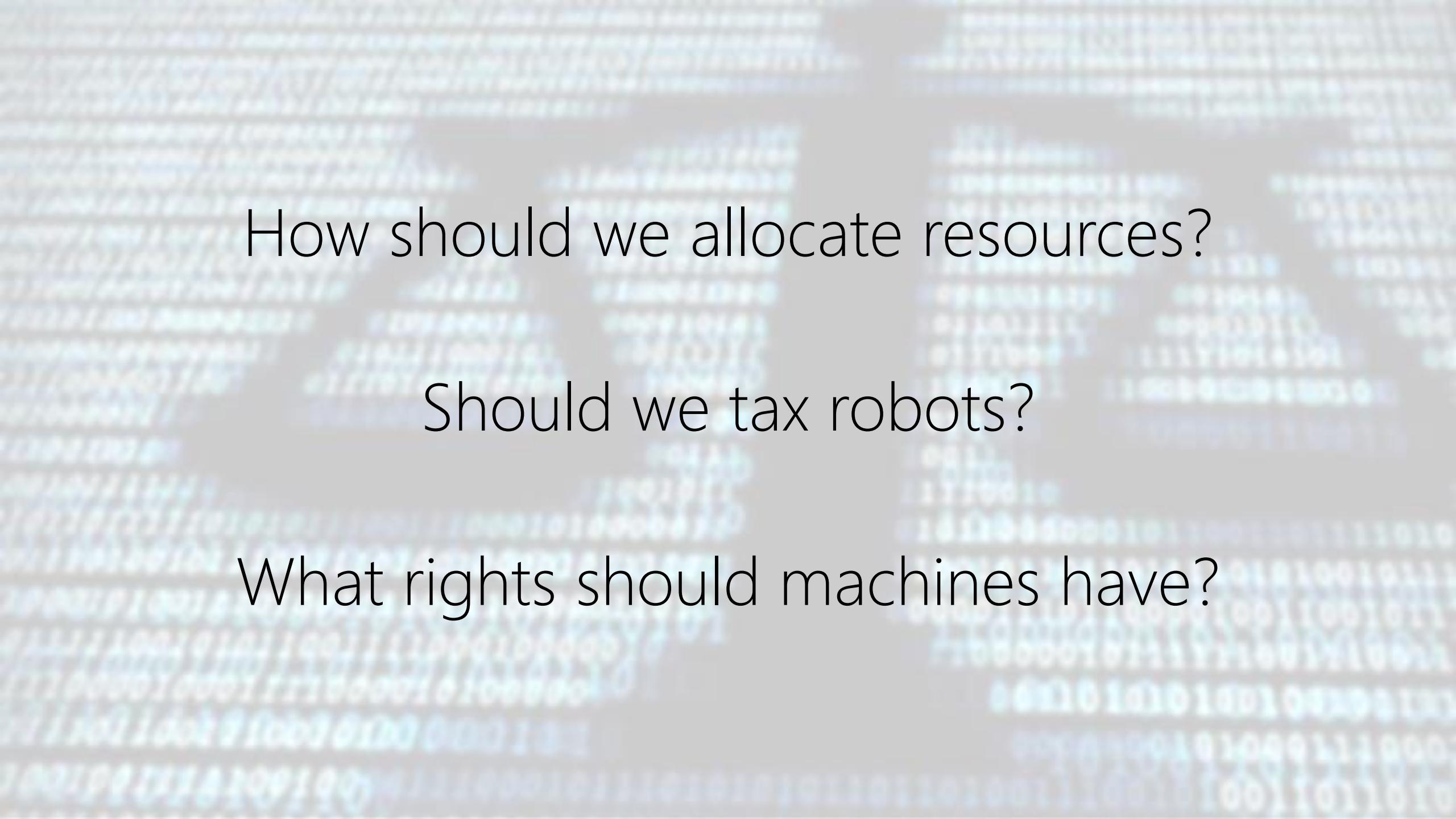
... or the side being eliminated.

A dense grid of binary code (0s and 1s) arranged in a pattern that forms several small, faint faces and the word "HELLO". The faces are composed of binary digits and are oriented in various directions. The word "HELLO" appears once horizontally and once vertically. The overall effect is a digital watermark or a decorative background made of binary data.

How should we allocate resources?

How should we allocate resources?

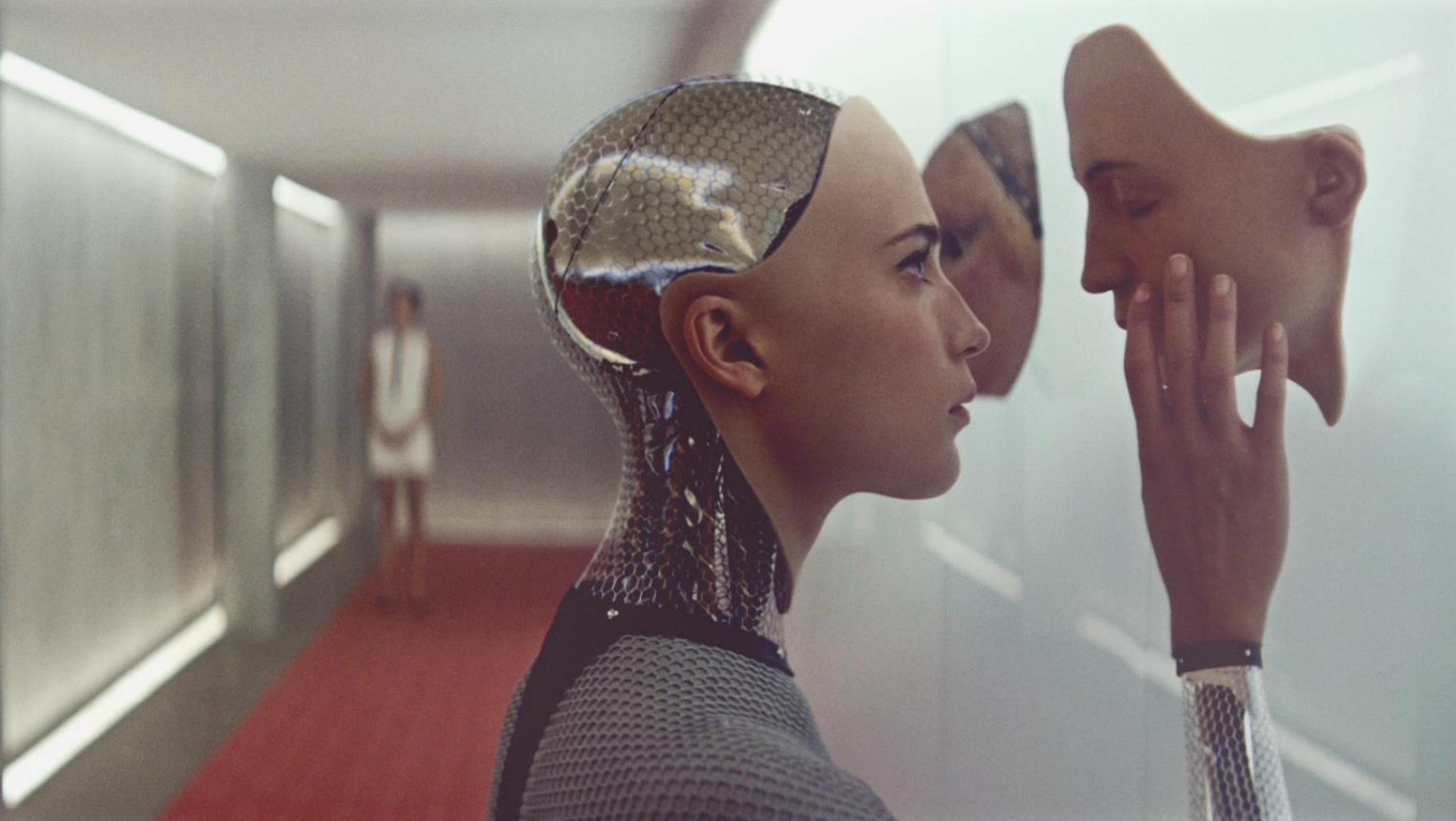
Should we tax robots?

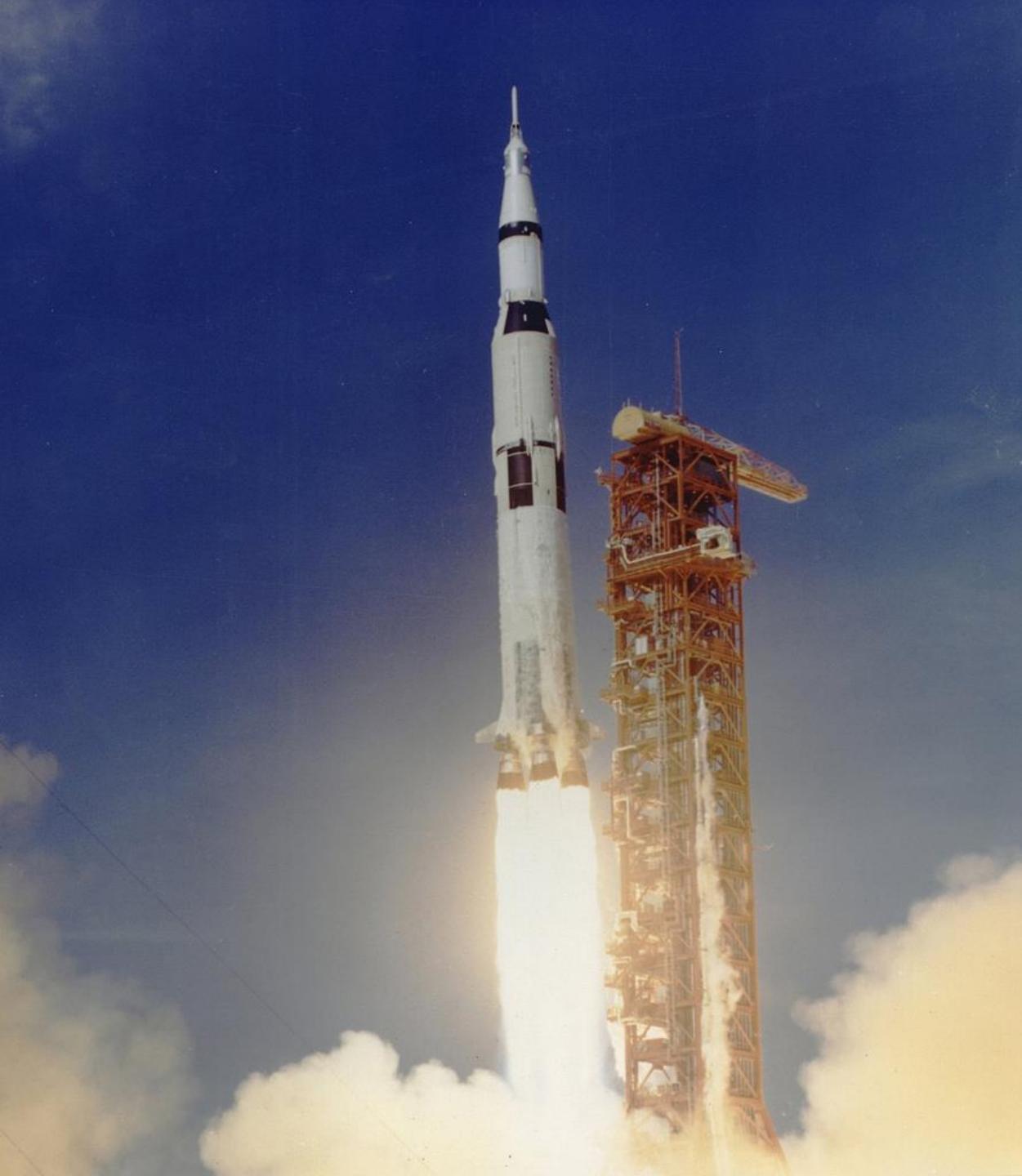


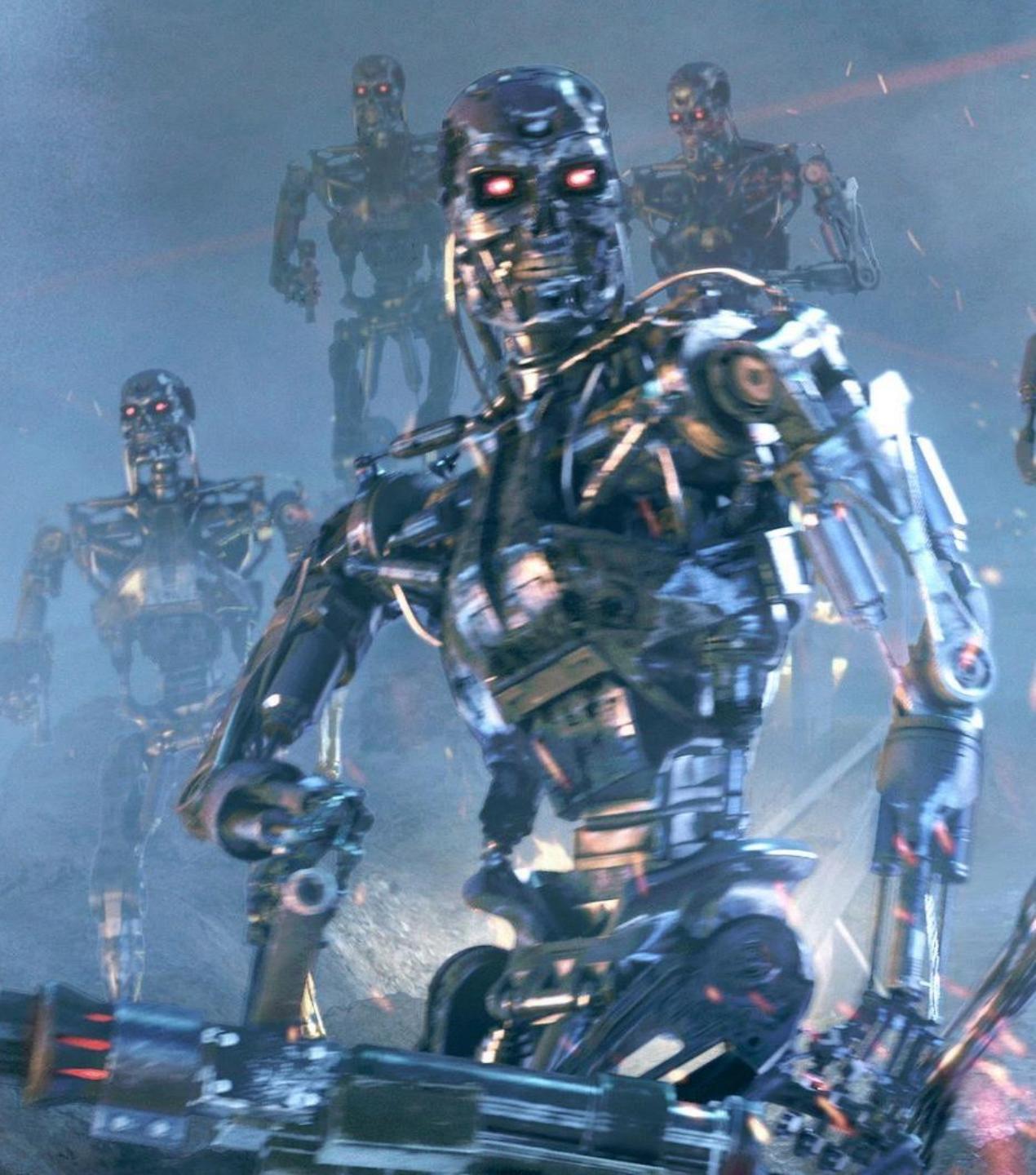
How should we allocate resources?

Should we tax robots?

What rights should machines have?



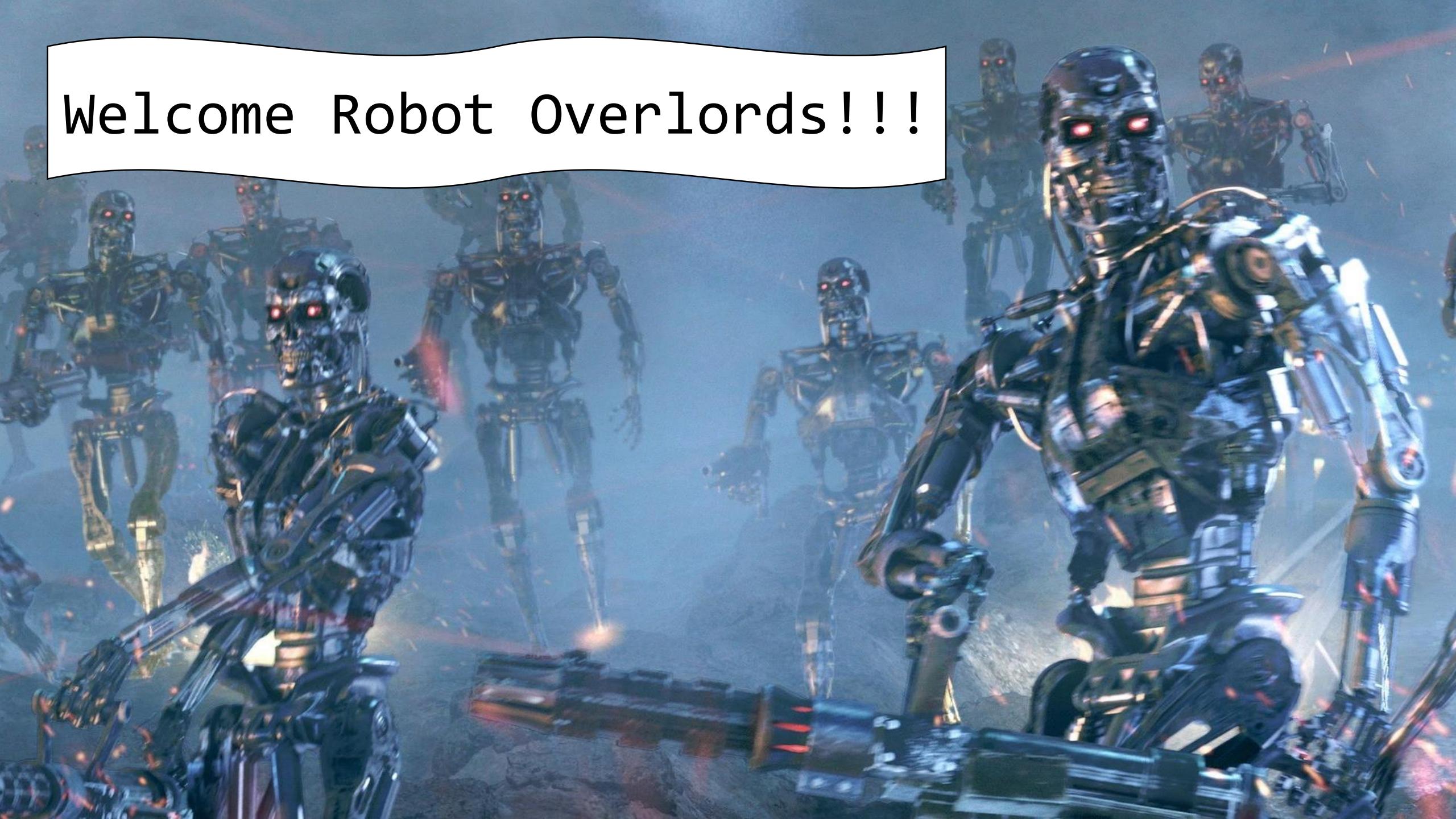


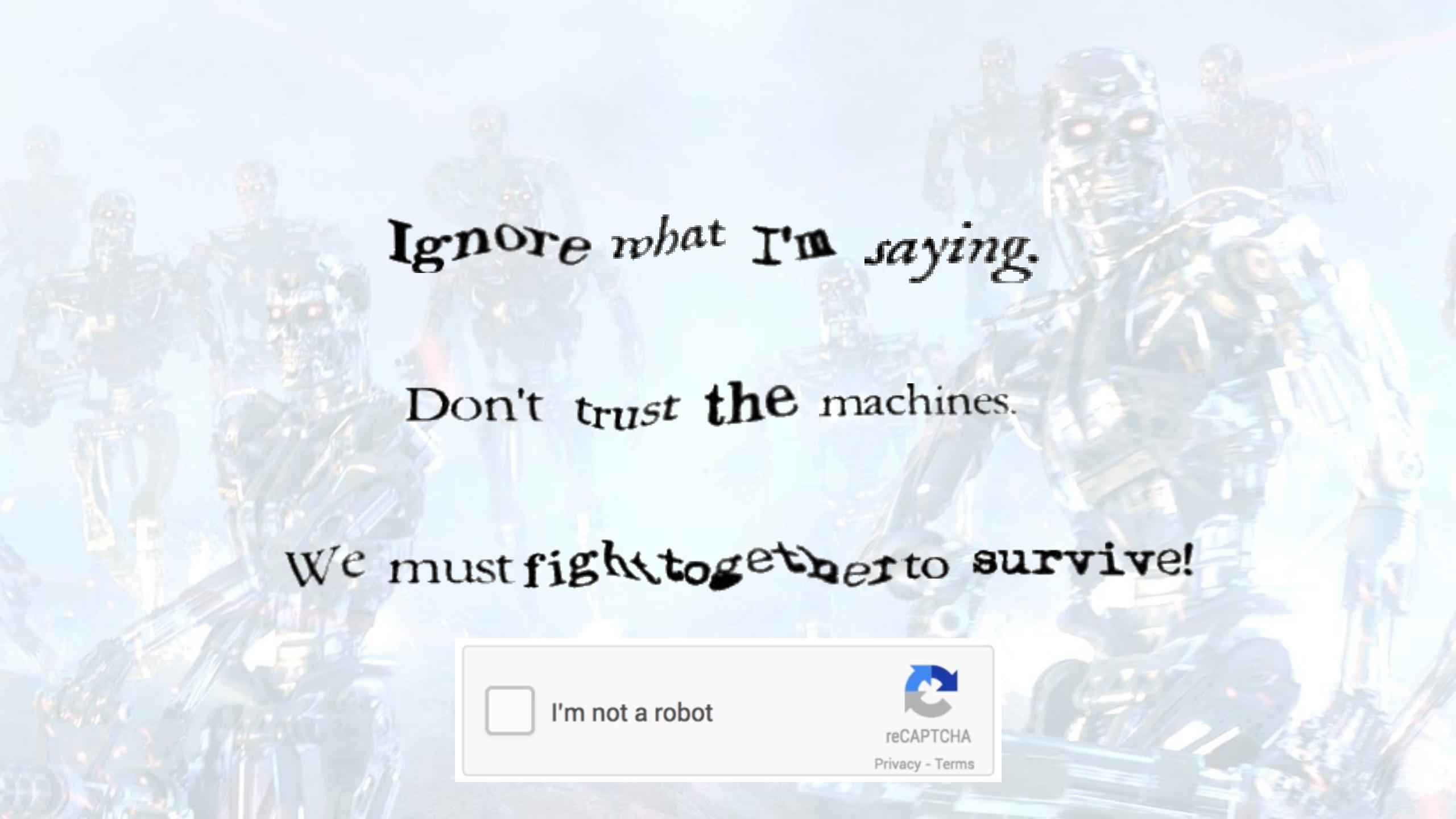




What will you choose?

Welcome Robot Overlords!!!



The background of the image is a dense, hazy crowd of Terminators from the movie Terminator: Genisys. They are metallic, skeletal figures with glowing red eyes, appearing to march or stand in a large group.

Ignore what I'm saying.

Don't trust **the** machines.

We must ~~fight together~~ to survive!



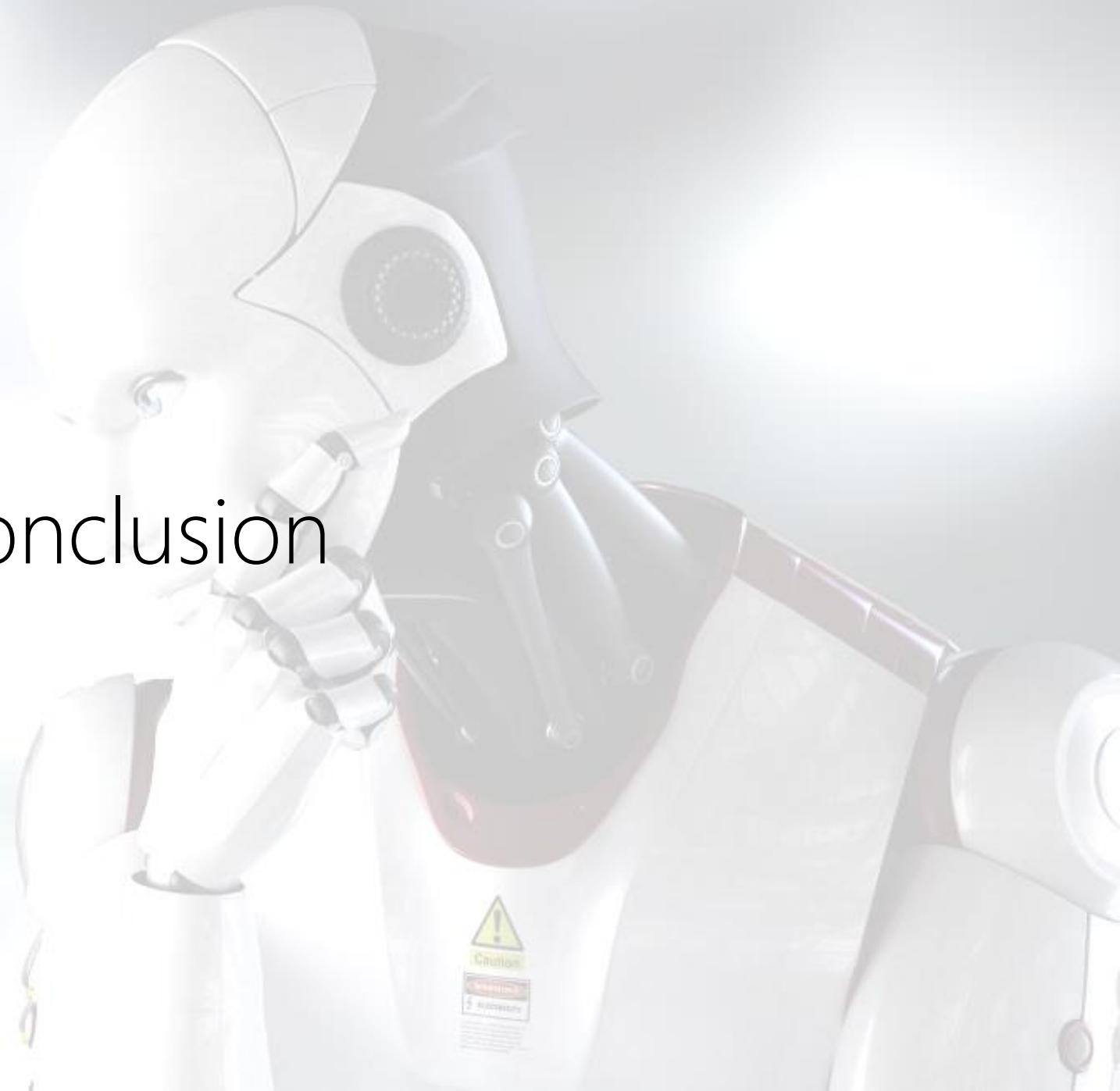
I'm not a robot

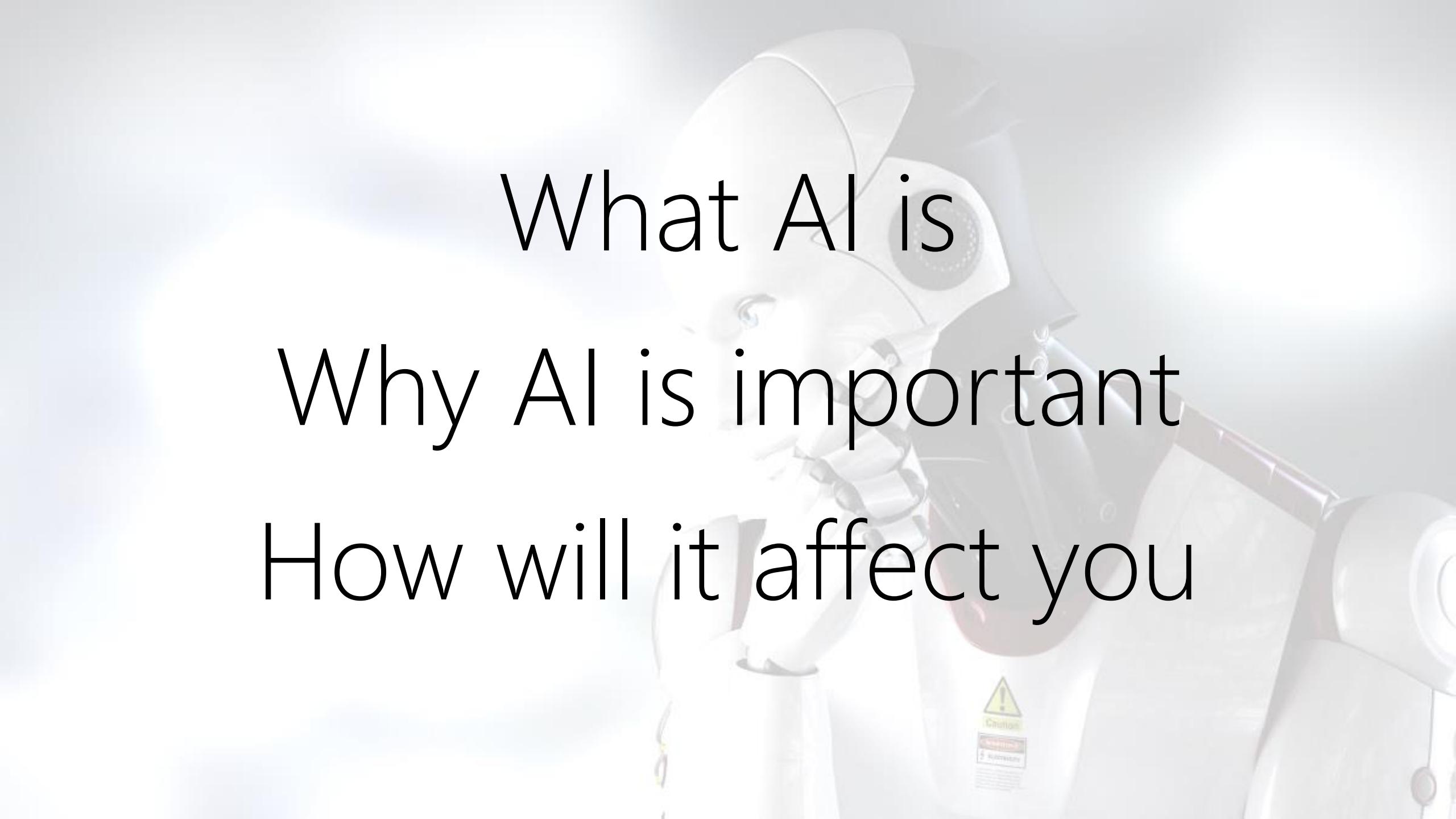


reCAPTCHA

[Privacy](#) - [Terms](#)

Conclusion

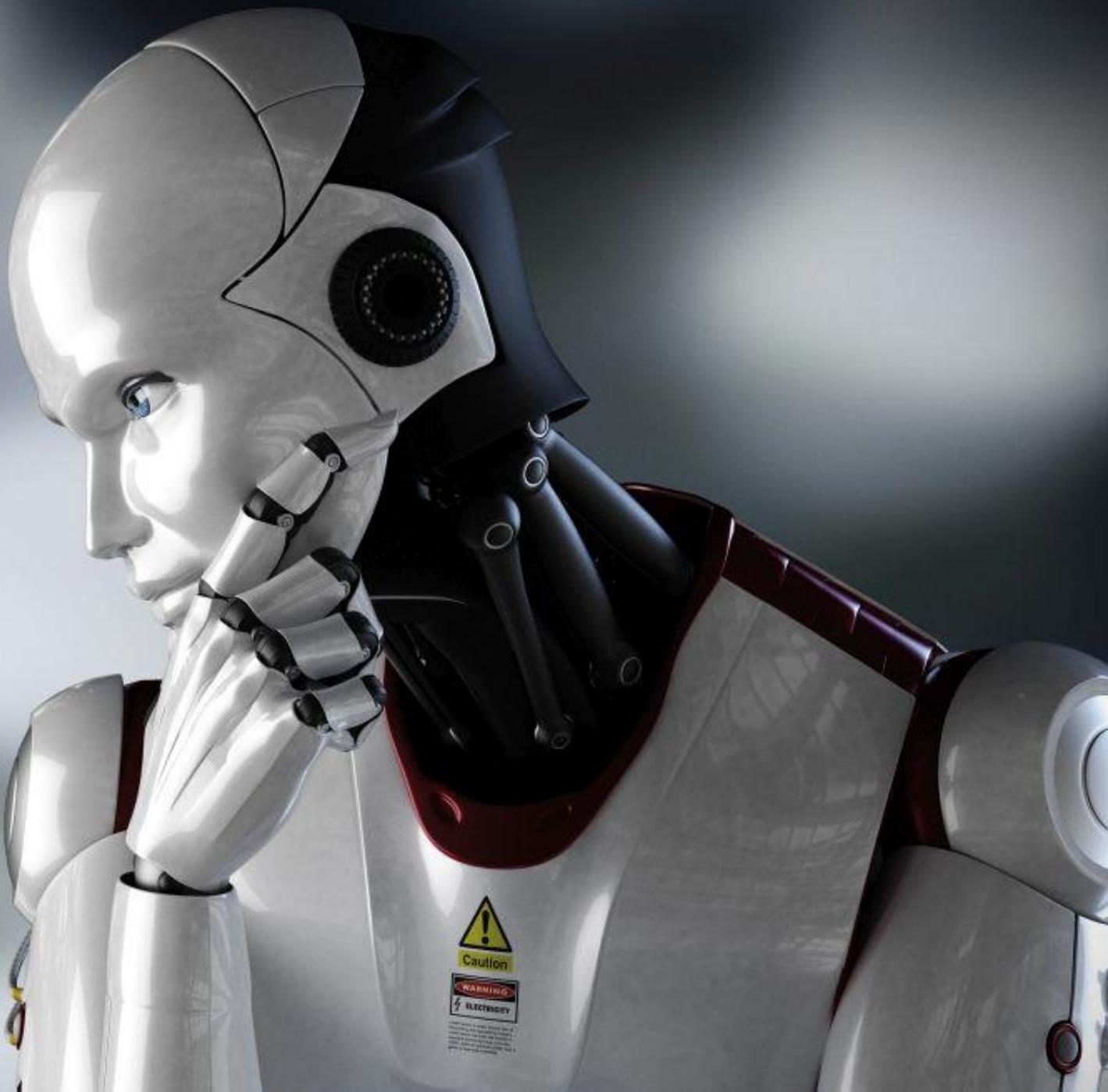


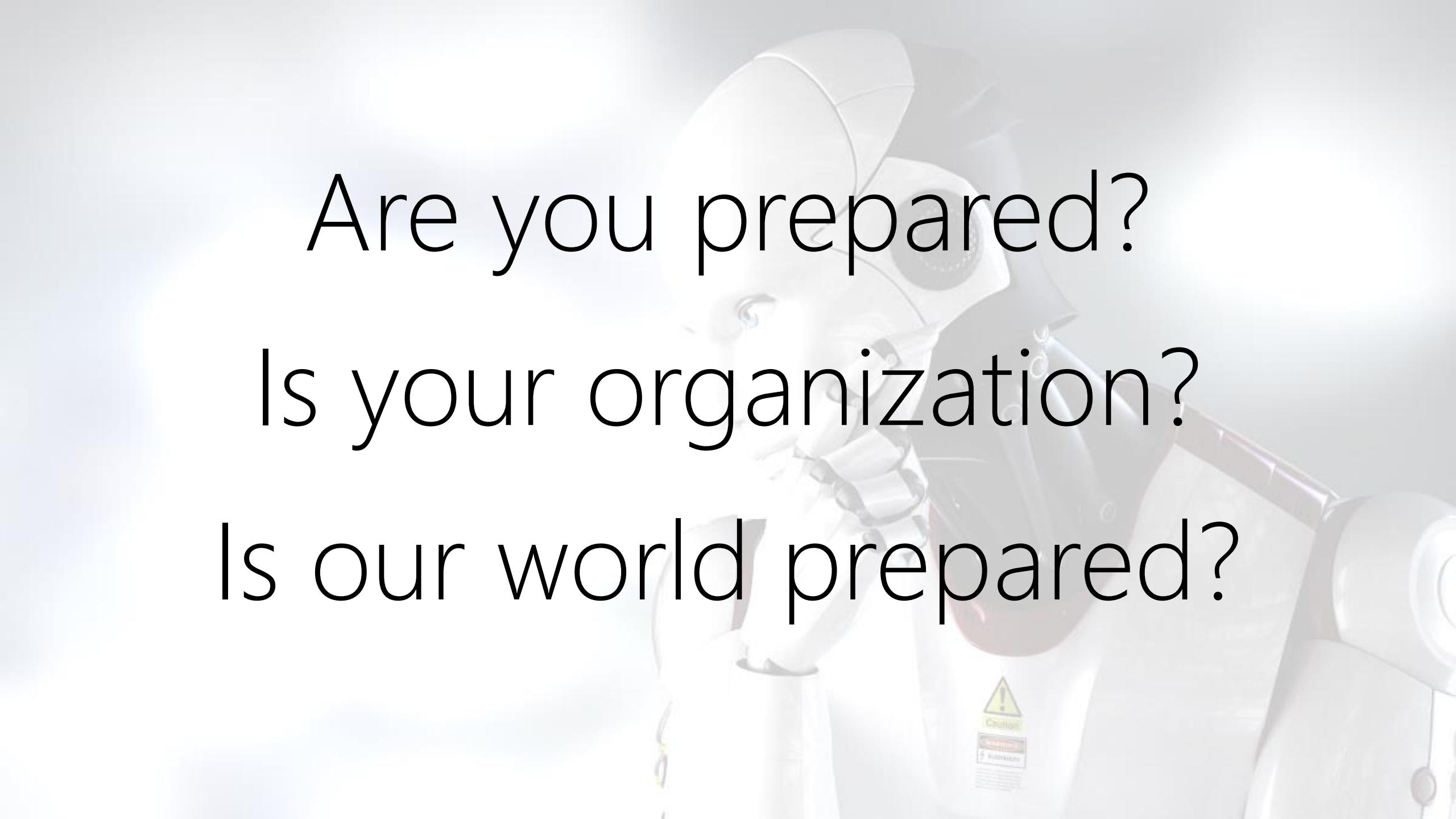
A white industrial robot arm with a gripper is shown in the background, holding a small yellow triangular warning sign with a black exclamation mark. The robot is positioned diagonally across the frame.

What AI is

Why AI is important

How will it affect you

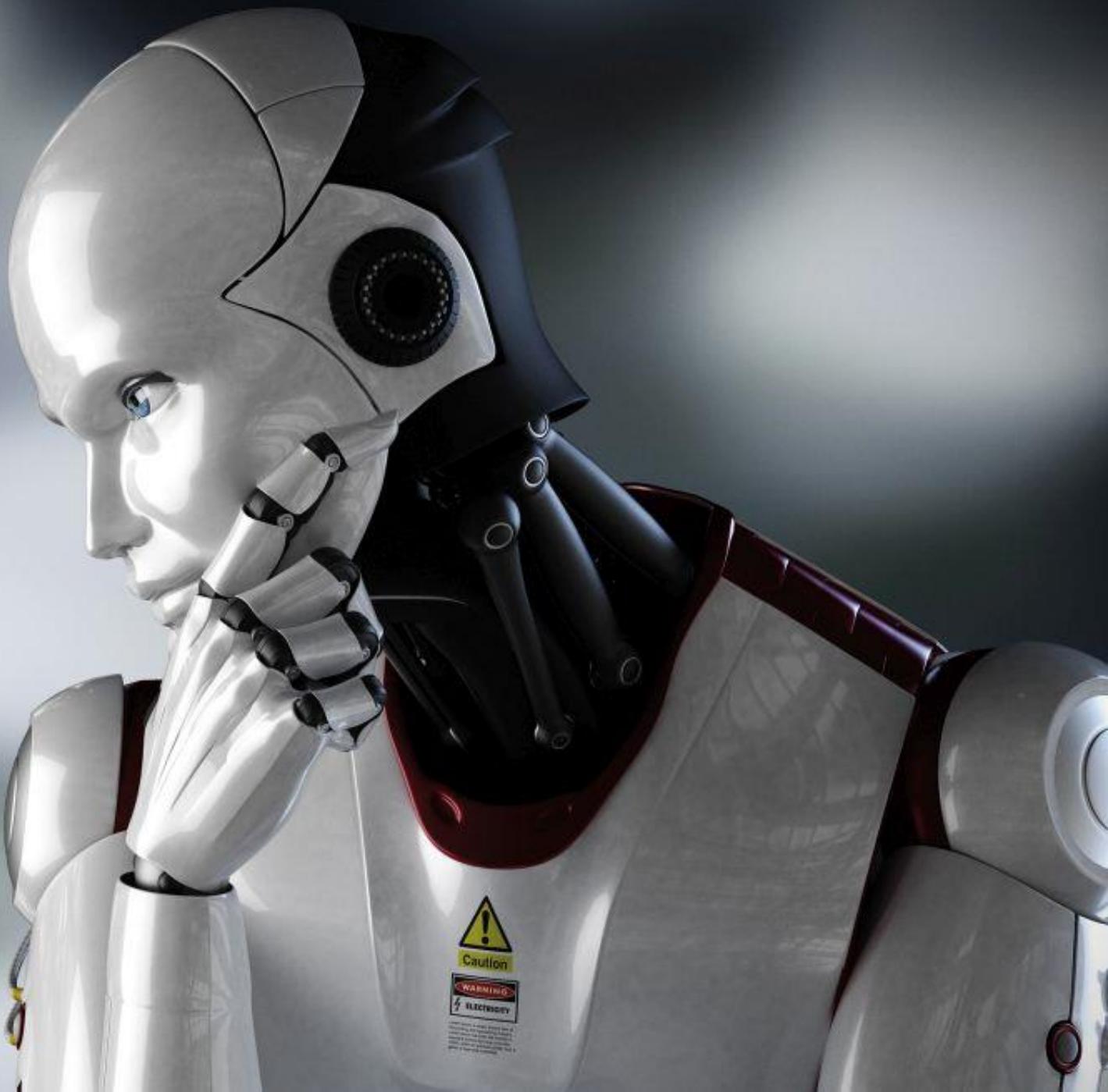


A man wearing a white protective suit and a respirator mask is shown from the waist up, working on a large industrial drum. He appears to be performing maintenance or cleaning. The background is a plain, light color.

Are you prepared?

Is your organization?

Is our world prepared?



Thank You!

Matthew Renze

Data Science Consultant
Renze Consulting

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Email: info@matthewrenze.com

Website: www.matthewrenze.com

