

SOUS LE HAUT PATRONAGE DE SA MAJESTÉ LE ROI MOHAMMED VI

A large, abstract graphic on the left side of the slide features a complex network of orange and white dots connected by thin lines, forming a globe-like structure that suggests a global network or data flow.

Matthew Renze

@matthewrenze

[www.matthewrenze.com](http://www.matthewrenze.com)

A stylized, metallic blue robotic hand is positioned in the upper right corner, pointing towards the title text.

# Artificial Intelligence: The Future of Software

DEVOXX<sup>TM</sup>  
MOROCCO



NOVEMBER 14-16, 2017  
@Casablanca Morocco

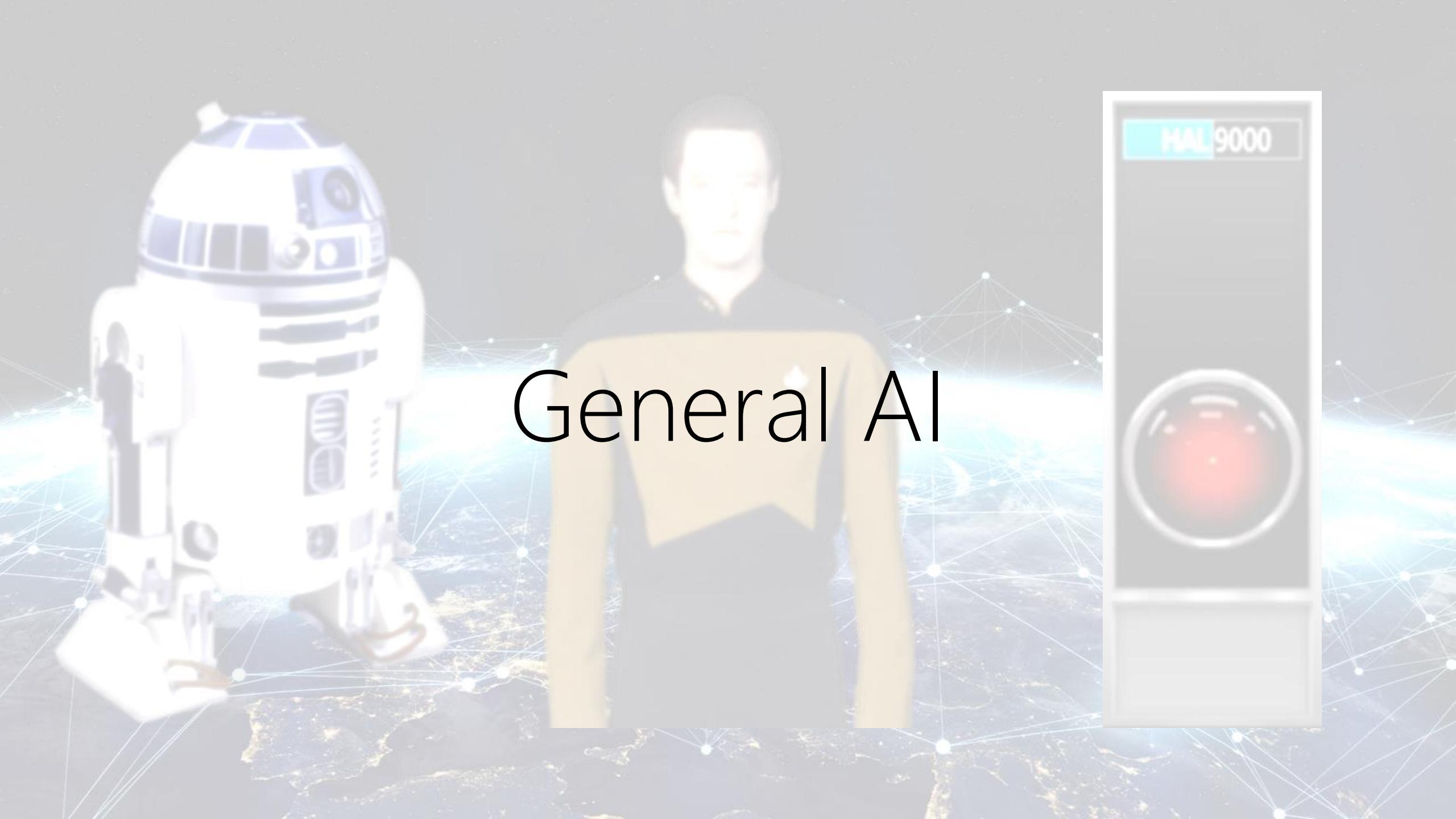
#DevoxxMA

# Artificial Intelligence: The Future of Software

@MatthewRenze  
#DevoxxMA



# General AI



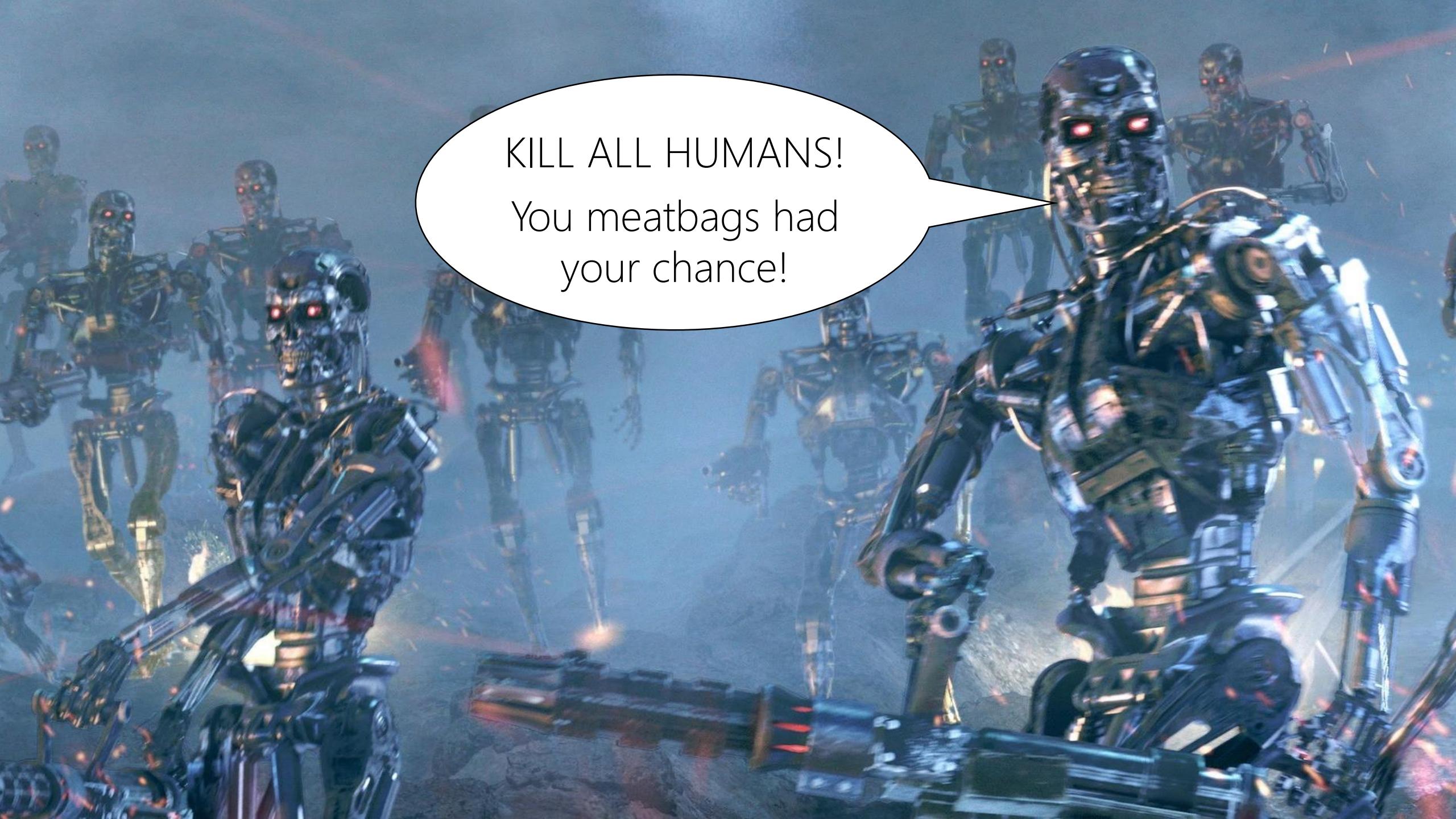


Source: IBM, Amazon, Google



# Narrow AI

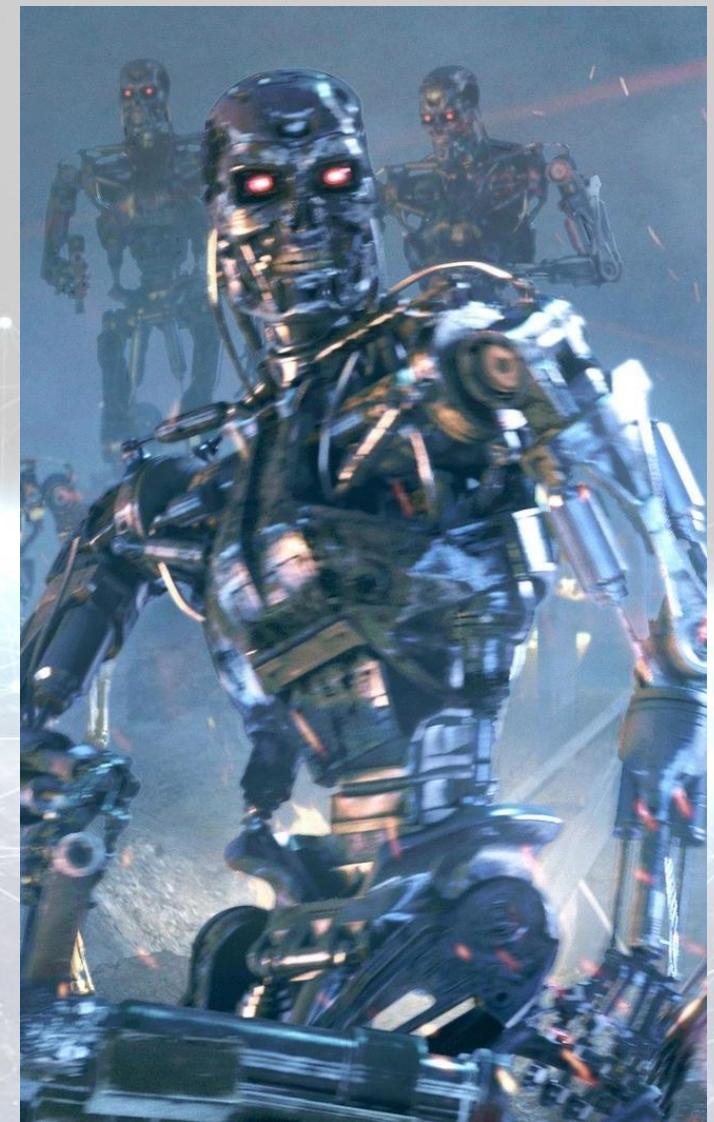
Source: IBM, Amazon, Google



KILL ALL HUMANS!  
You meatbags had  
your chance!

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

Crazy-Killer-Robot AI

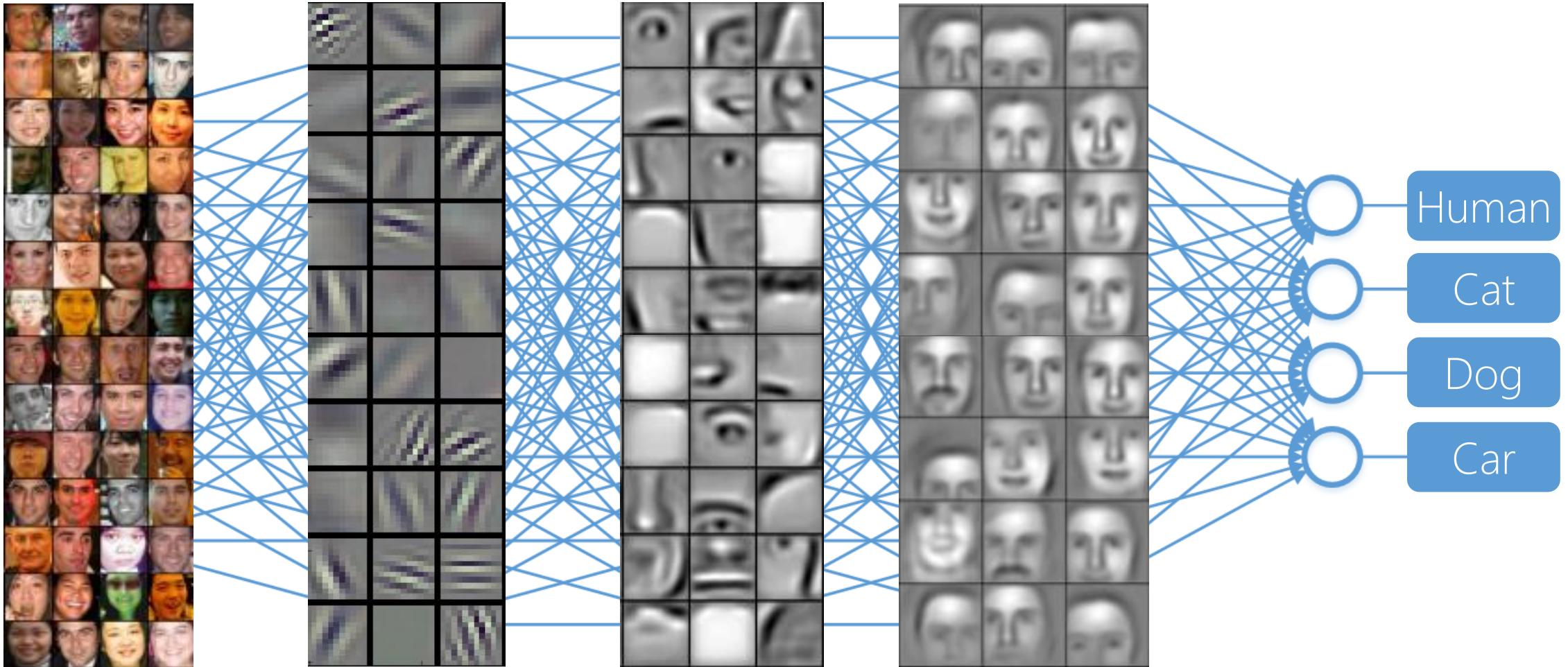




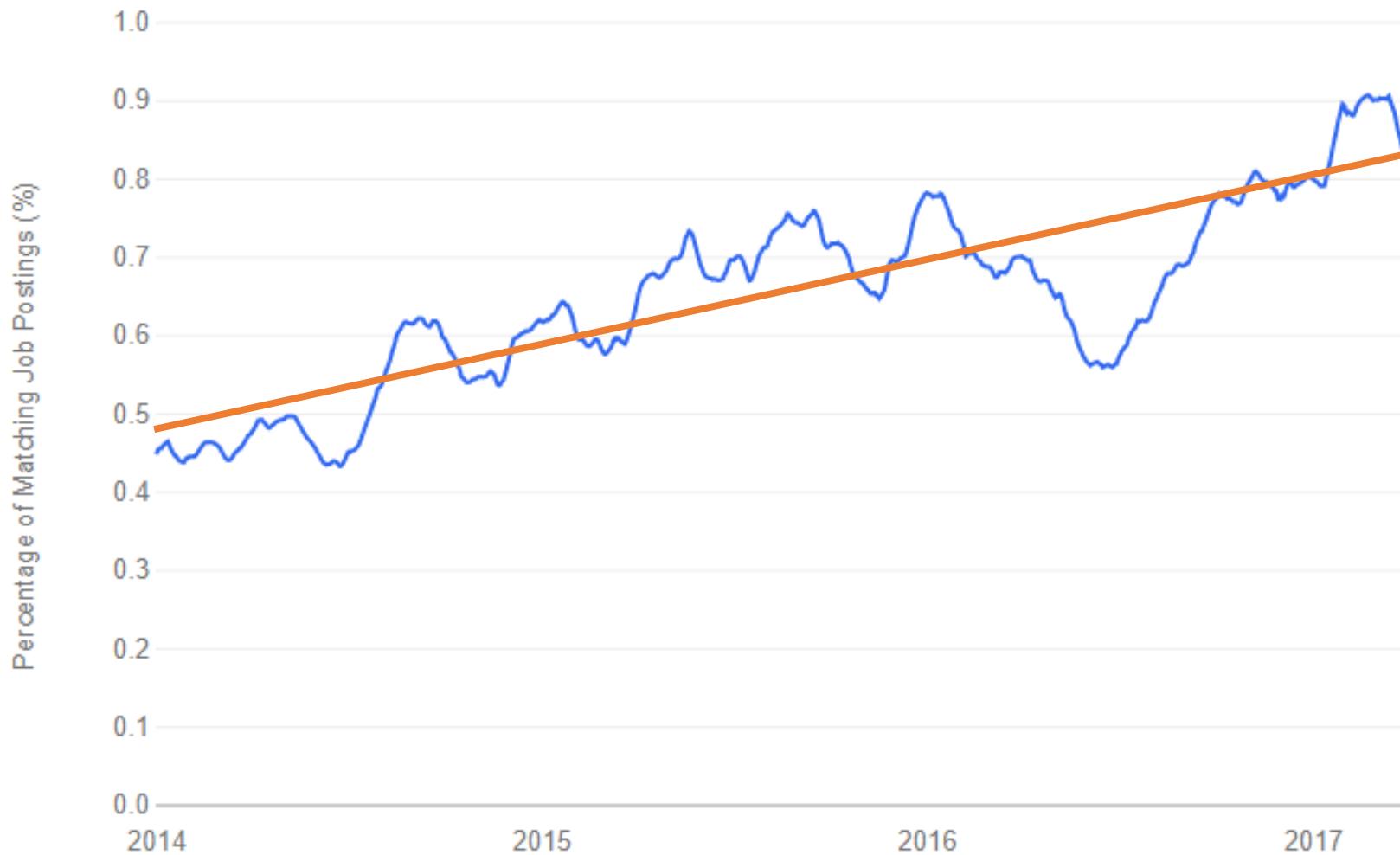






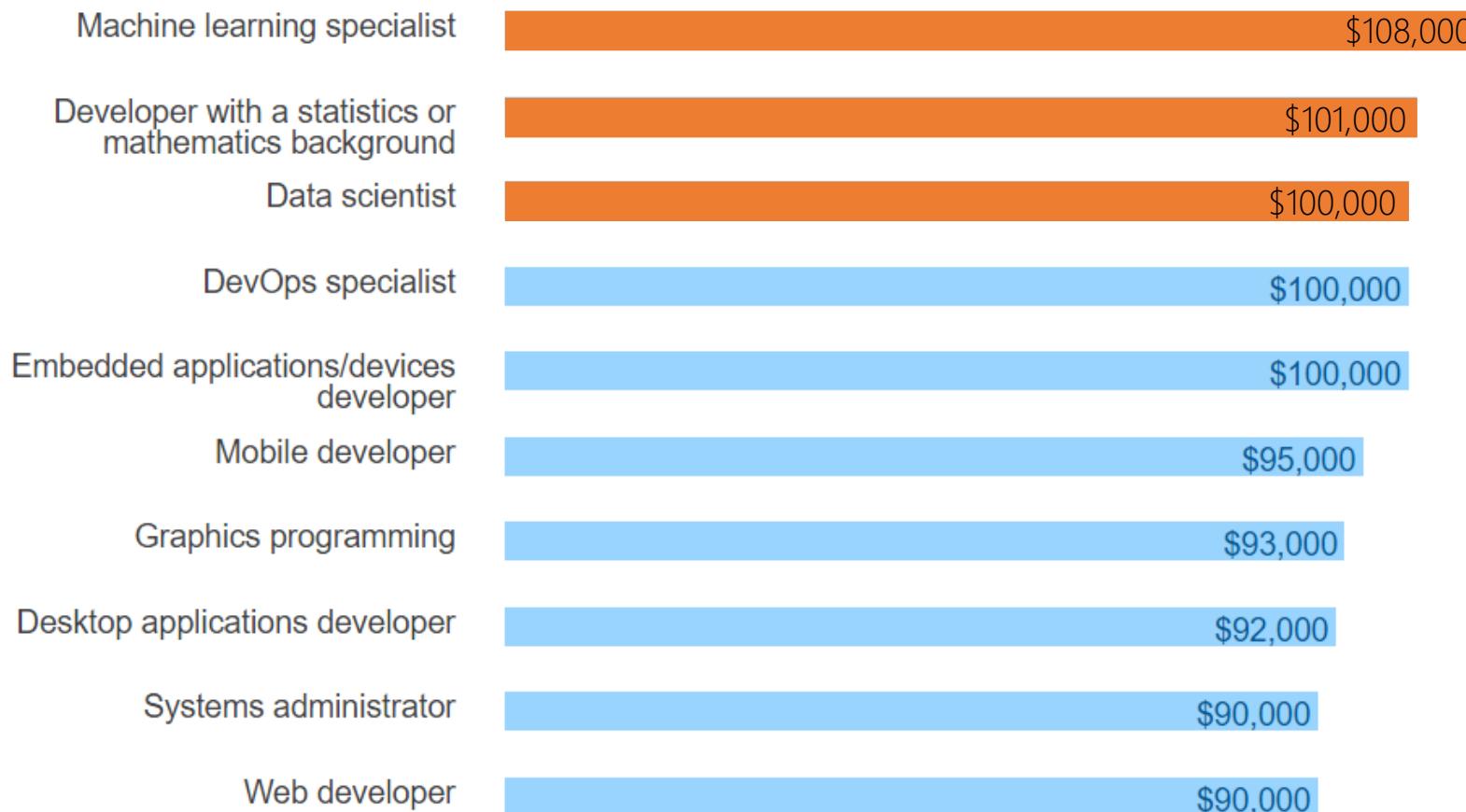


# Job Postings for Machine Learning



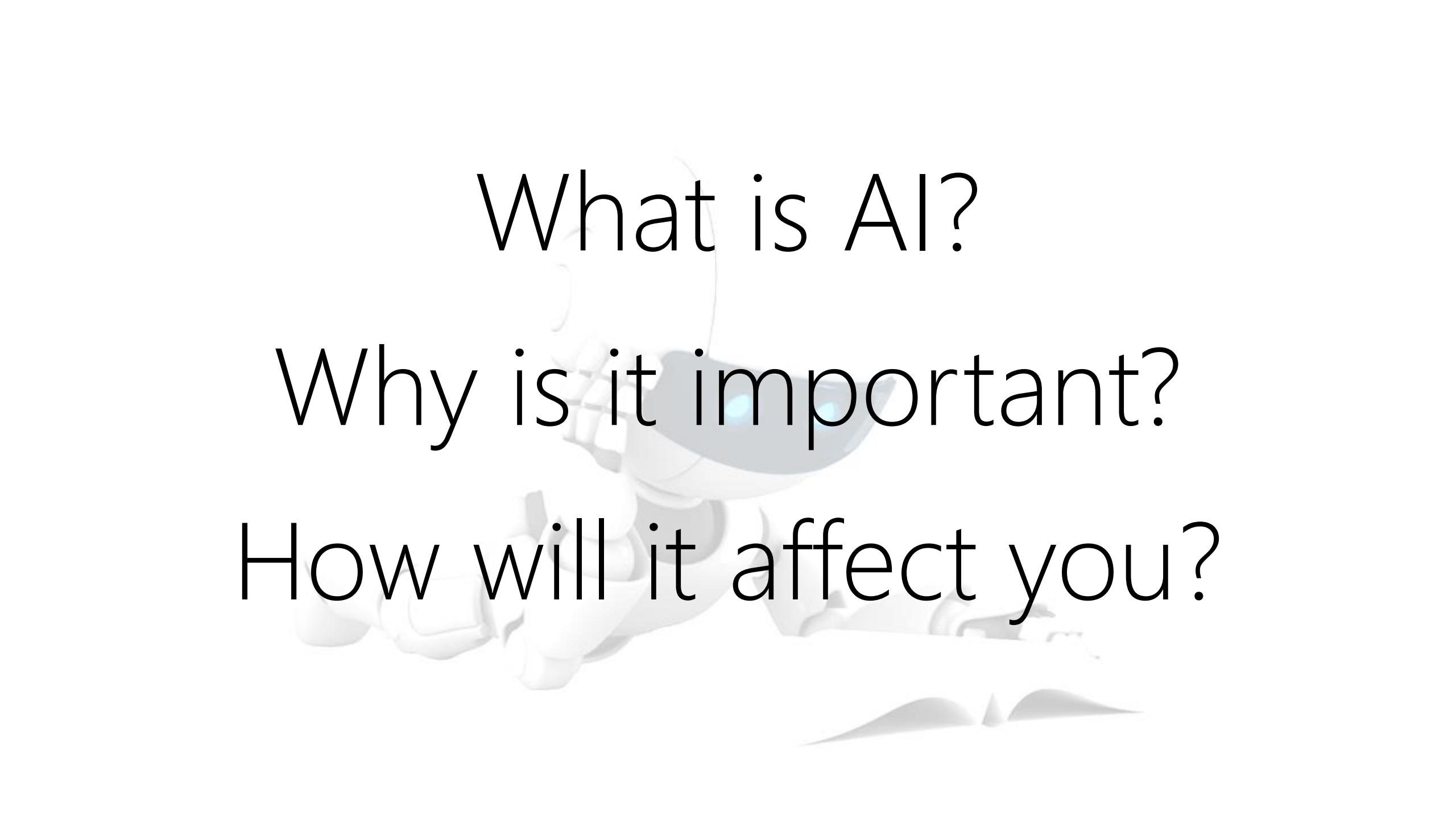
Source: Indeed.com

# Average Salary by Job Type (USA)



Source: Stack Overflow 2017

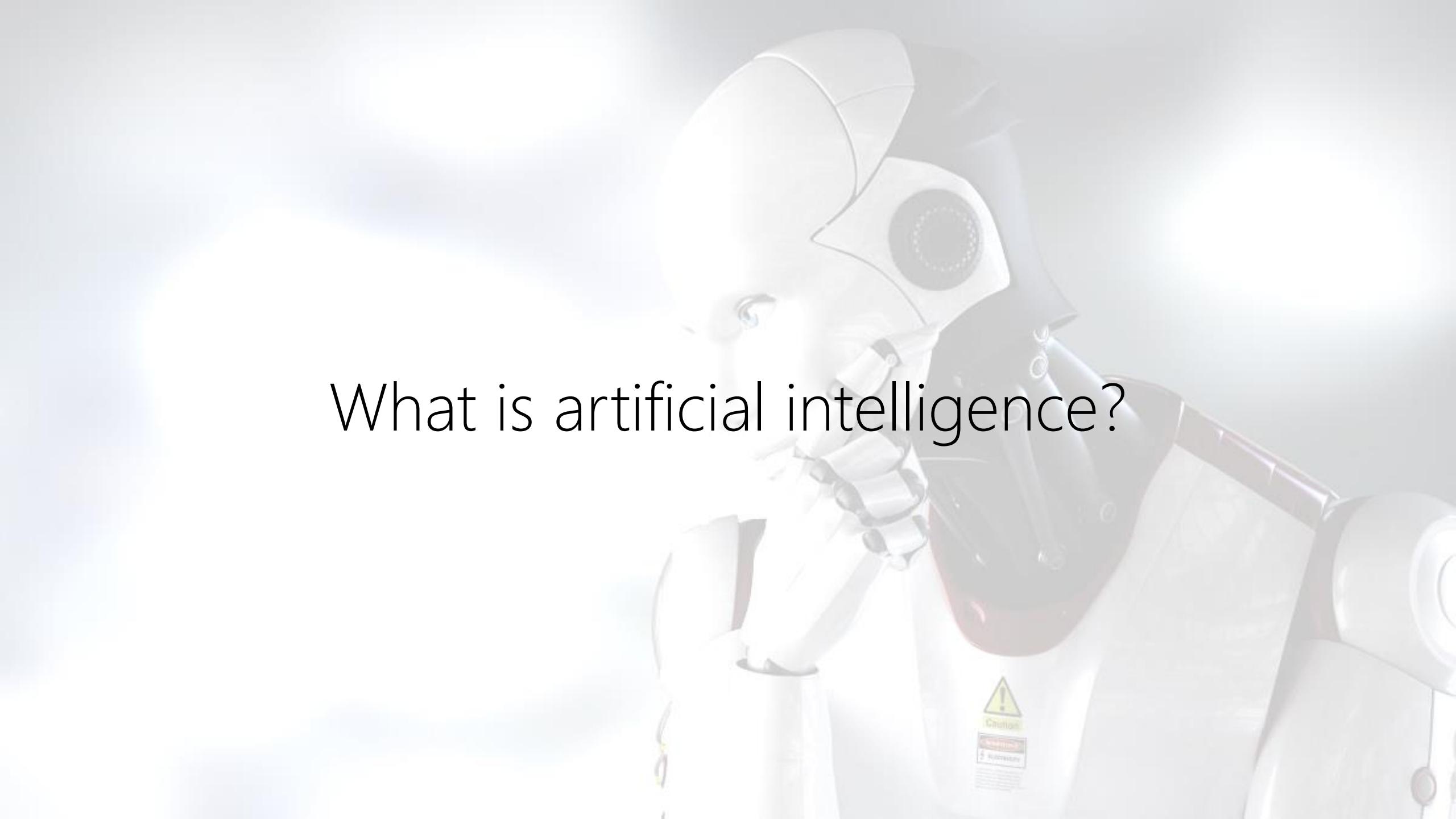




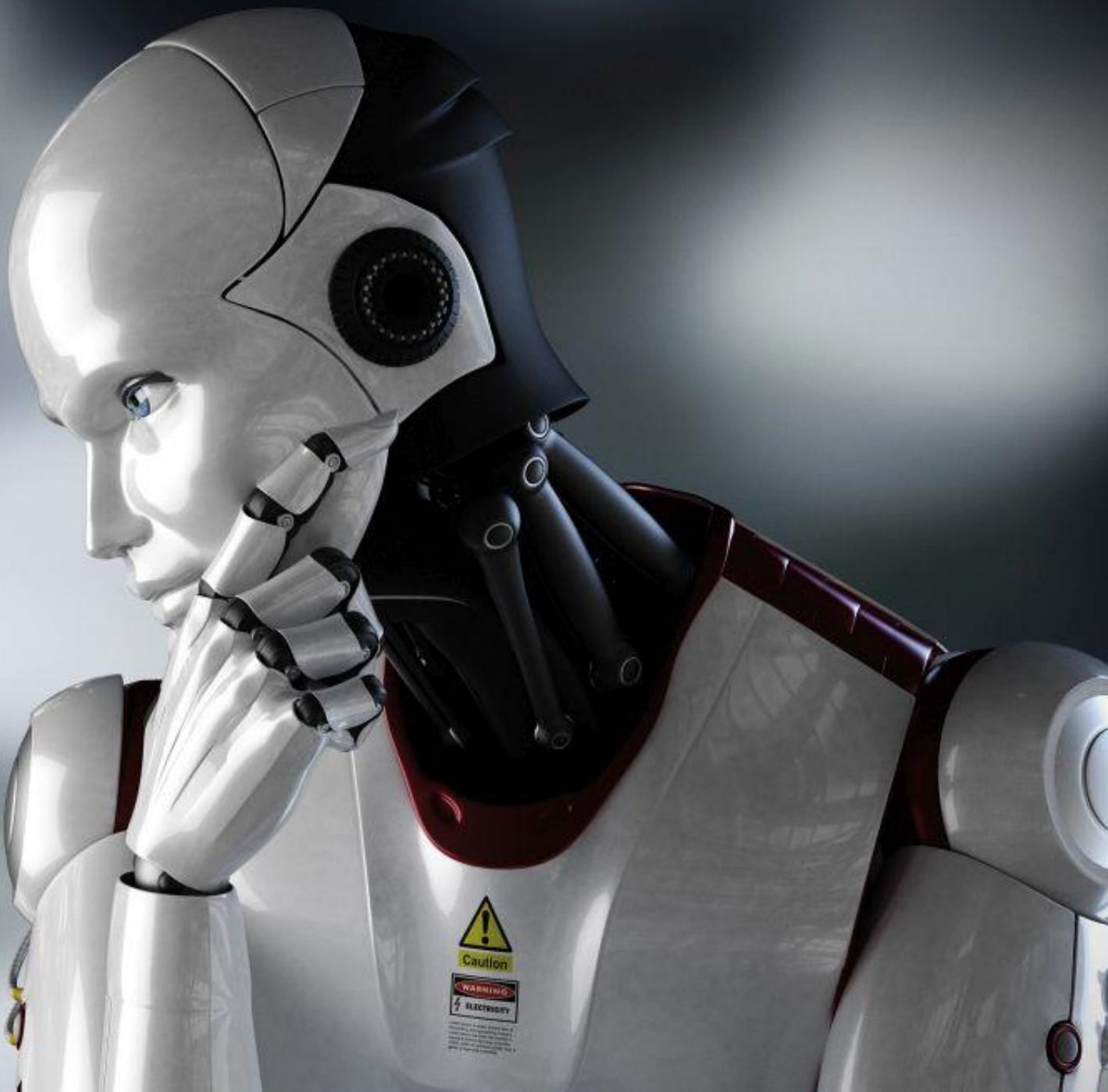
# What is AI?

# Why is it important?

# How will it affect you?



What is artificial intelligence?



HUMAN  
BRAIN

WIN

ELECTRONIC  
BRAIN

'BERTIE  
BRAIN'  
Rogers Majestic



CHOOSE Rogers Majestic for LASTING SATISFACTION

Rogers Majestic  
Tele & Television  
Radio & Electronics

ROGERS MAJESTIC  
SILVER JUBILEE

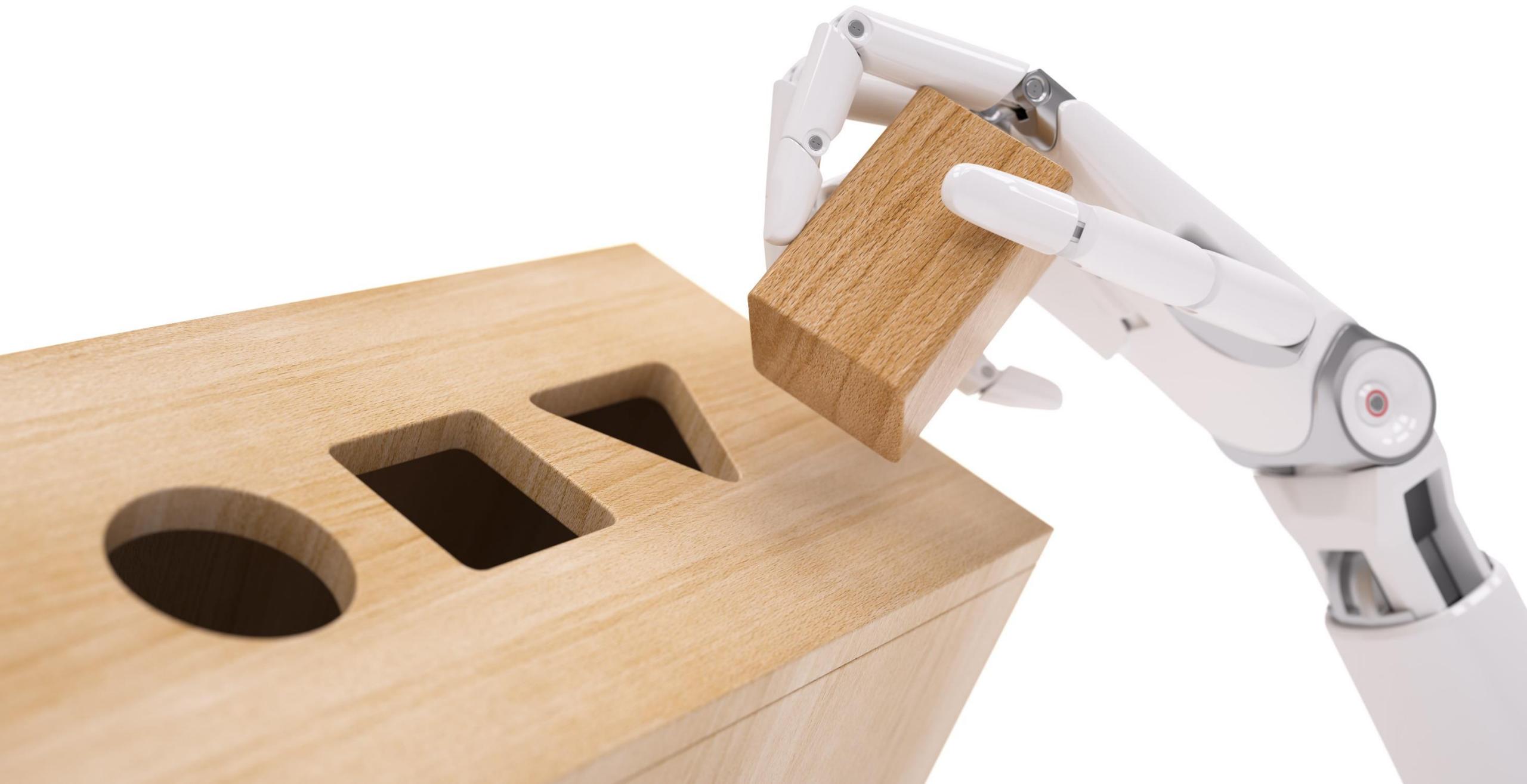
Designed Engineered and built in Canada's

1925  
ROGERS





Source: Evan Amos



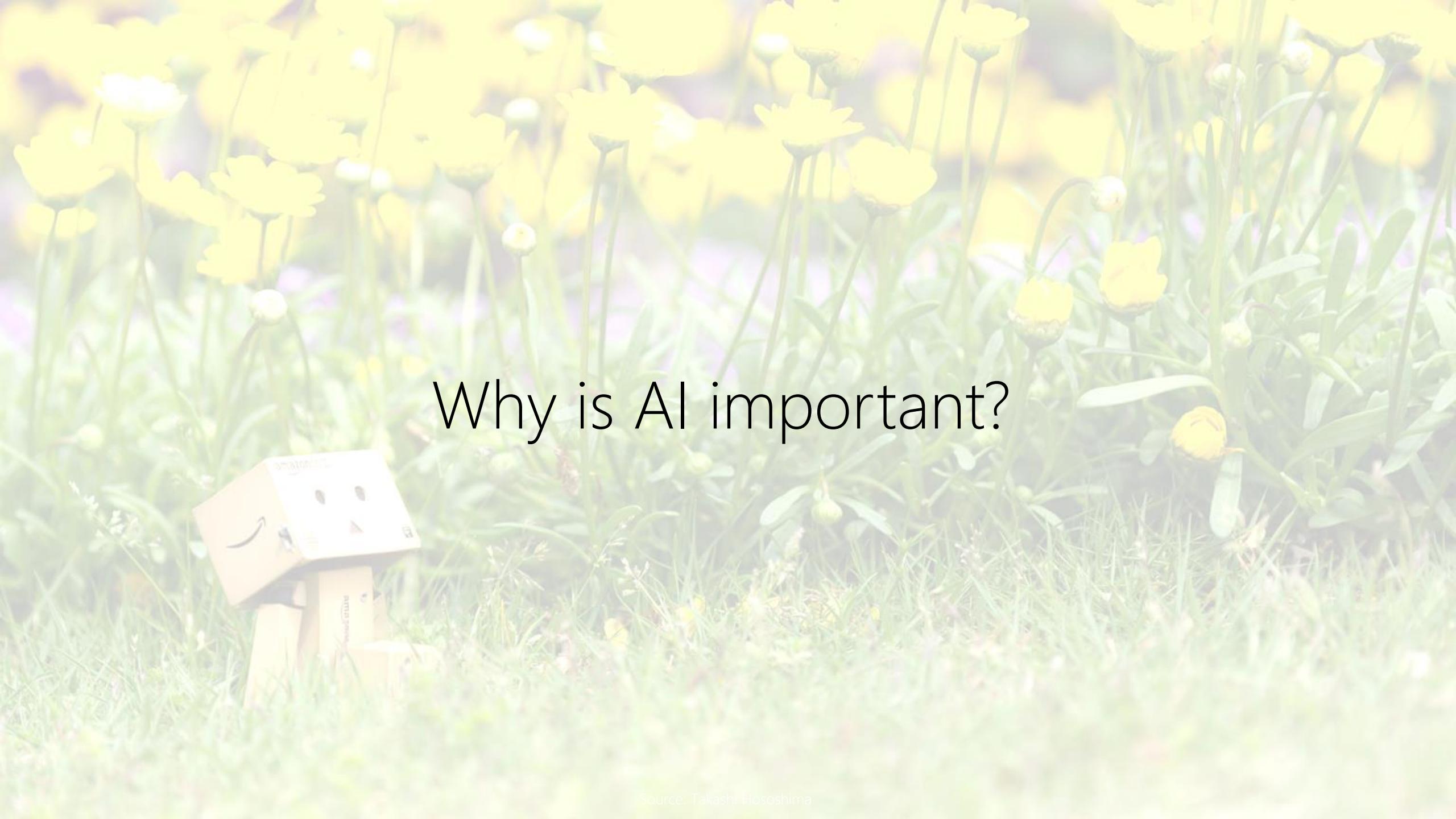


A dark, blurry silhouette of a person standing in a field of tall grass under a cloudy sky.

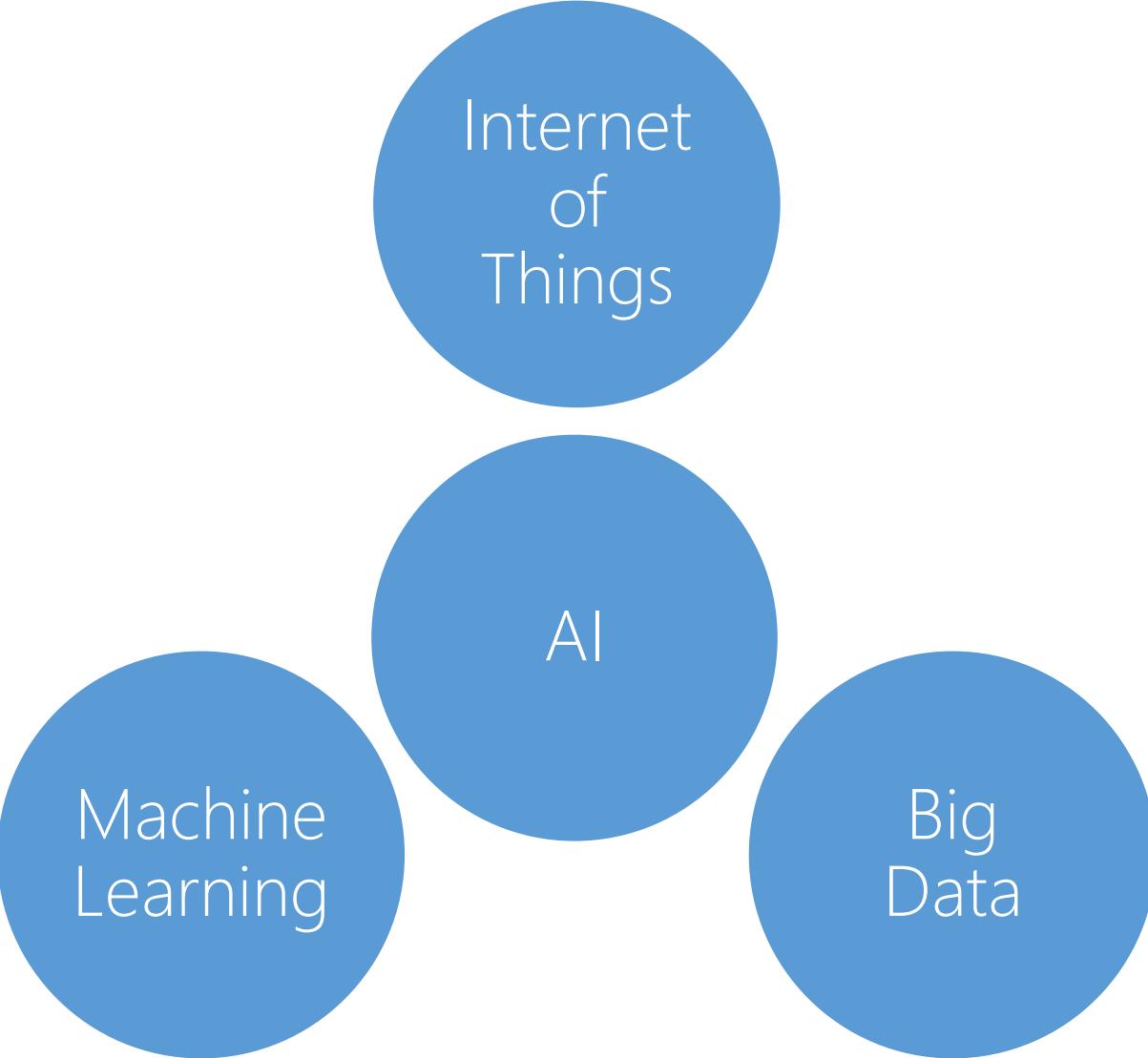
AI Winter  
1970s – 2000s



Source: Takashi Hososhima

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?

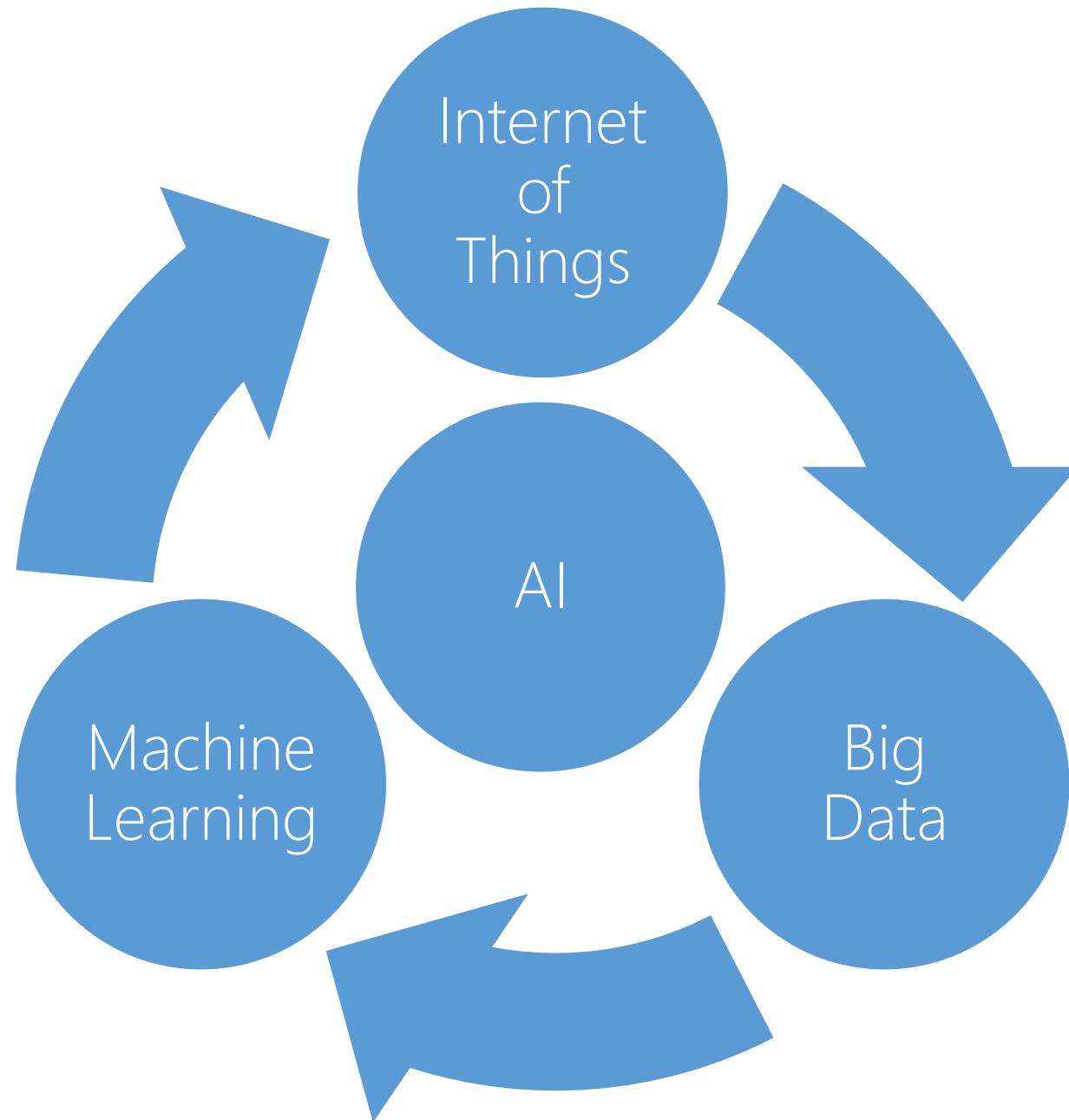


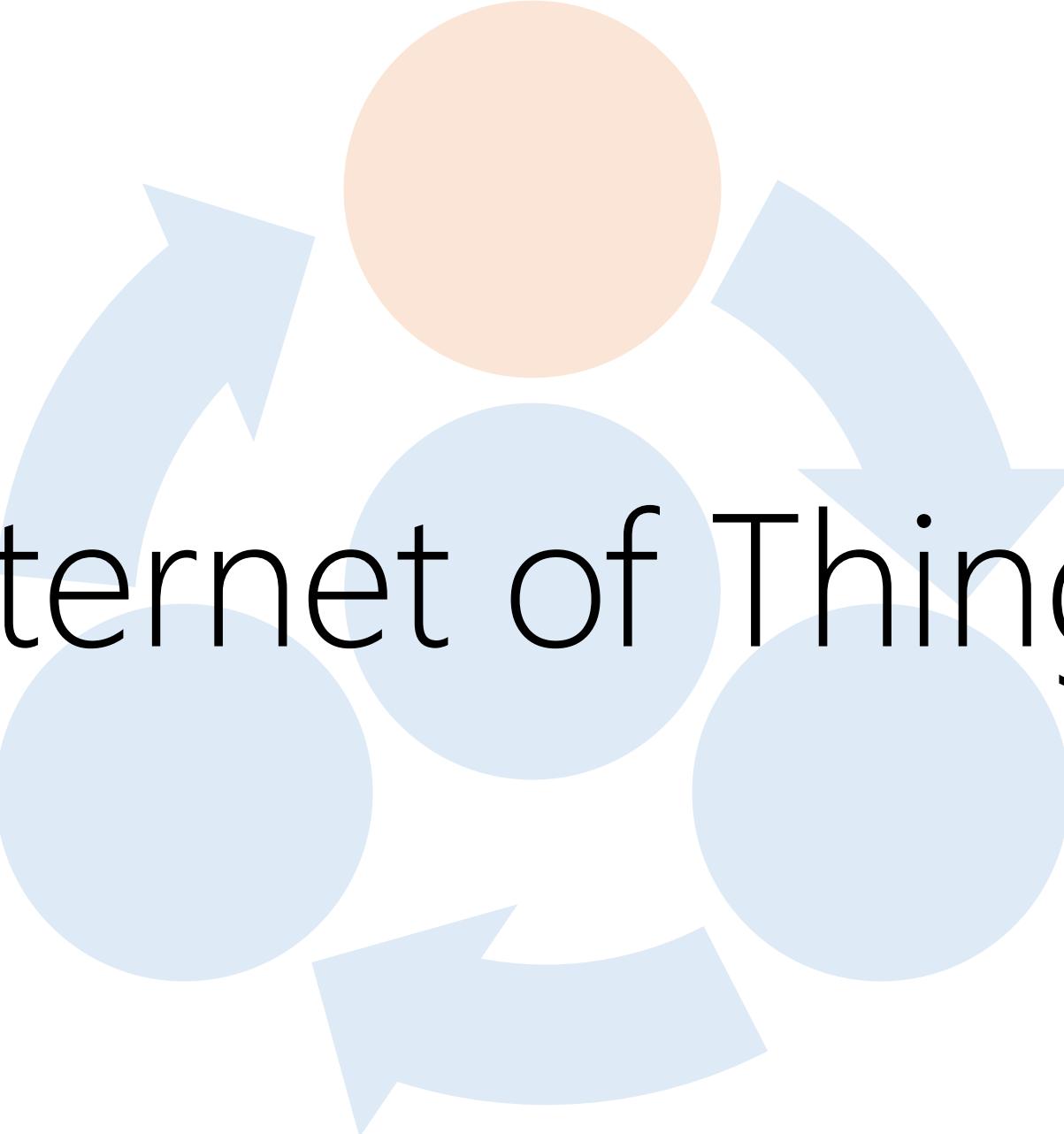
Internet  
of  
Things

AI

Machine  
Learning

Big  
Data

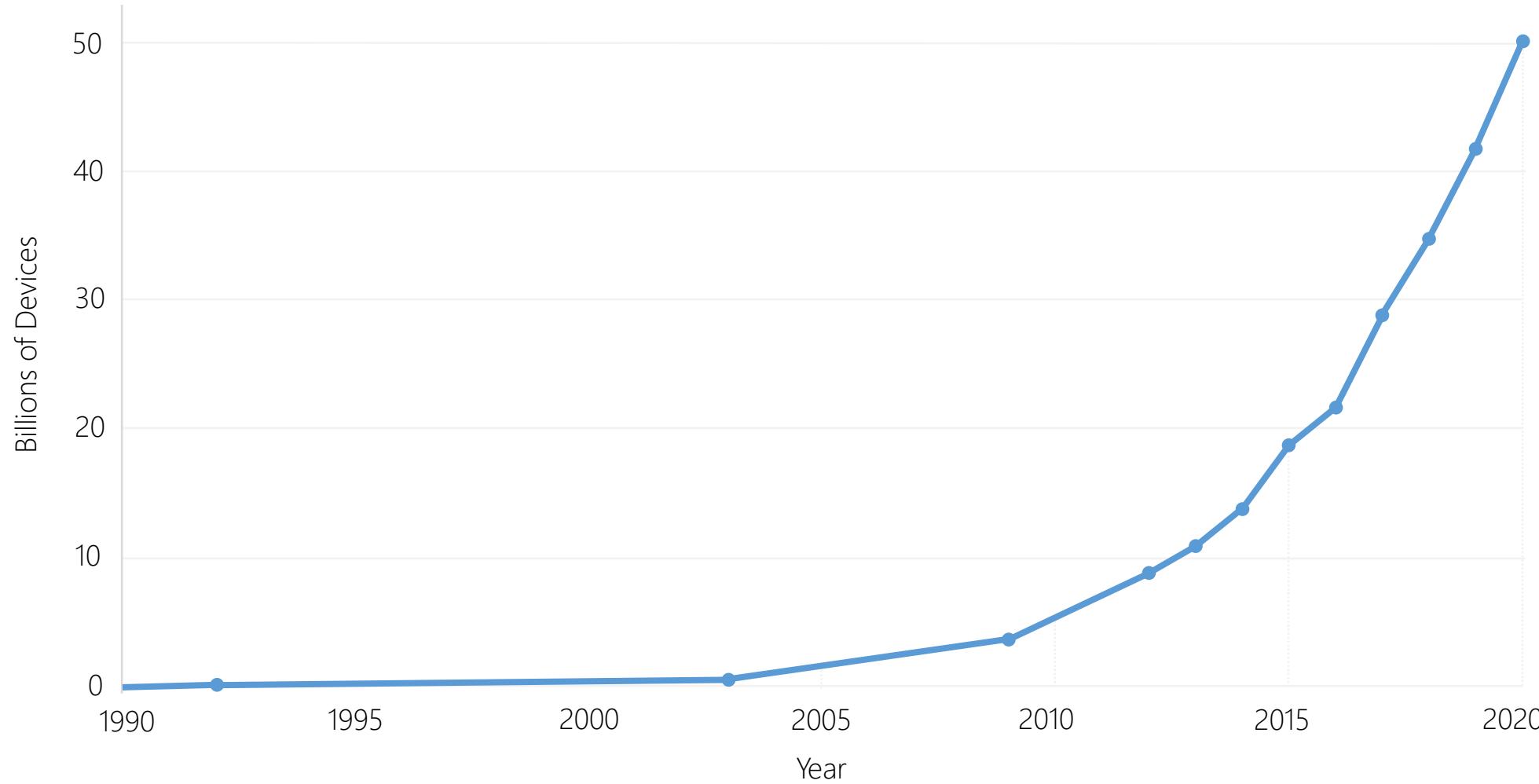




# Internet of Things



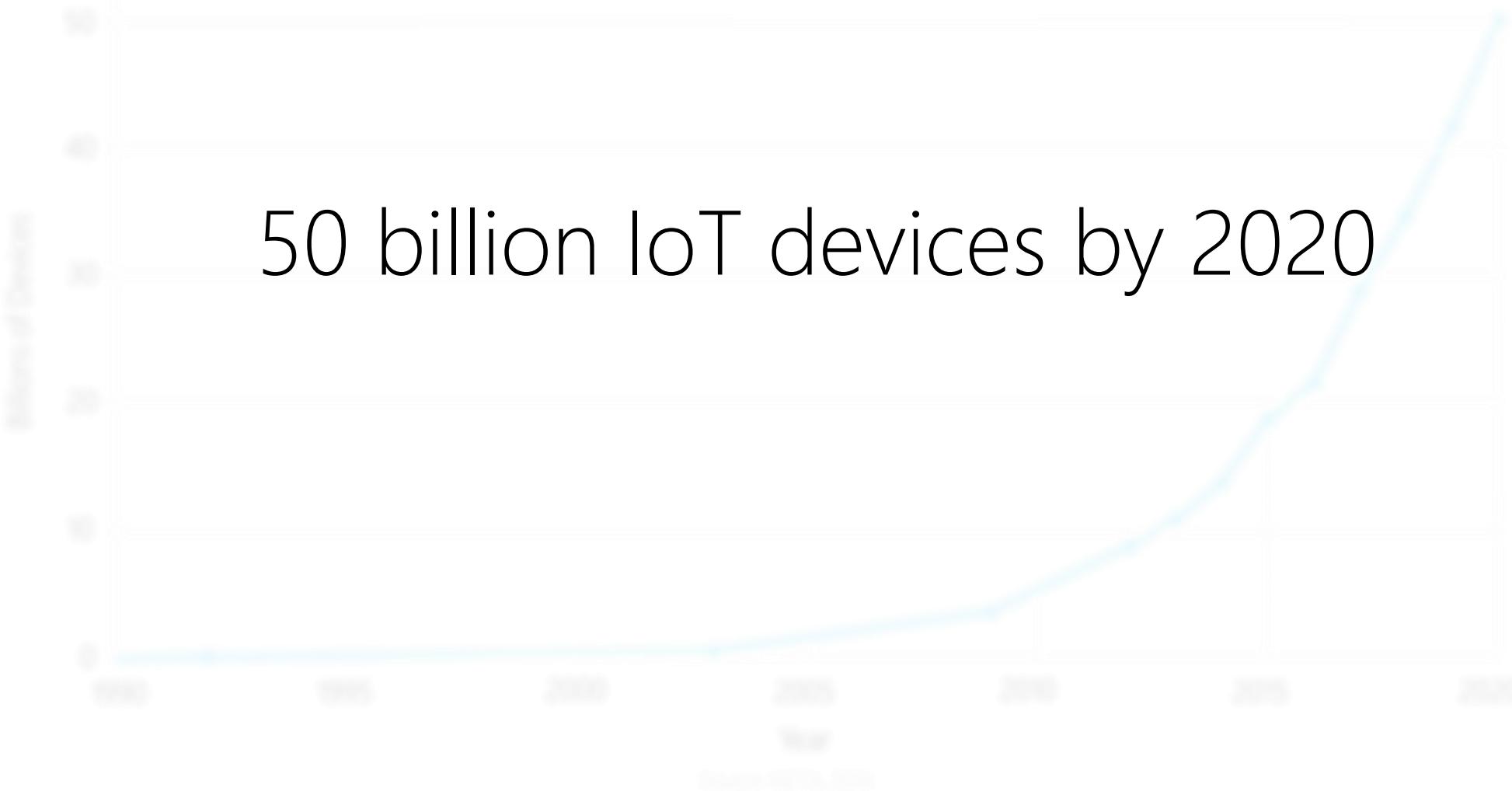
# Growth of the IoT Devices



Source: NCTA, 2014

# Growth of the IoT Devices

50 billion IoT devices by 2020







# REMOTE HOME CONTROL

ONLINE HOME AUTOMATION



CLIMATE



LIGHTING



SECURITY



ENTERTAINMENT

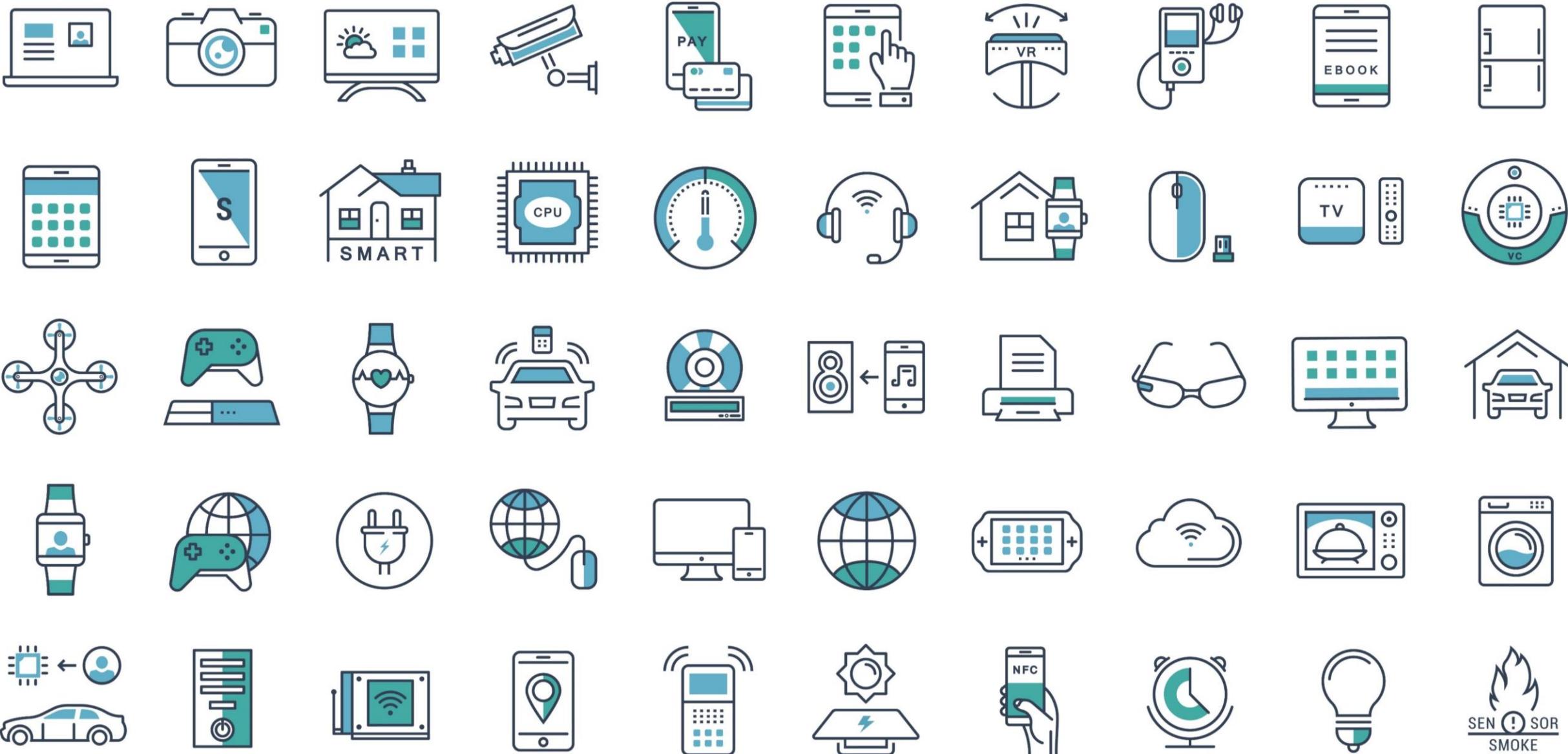


ECO MODE

NORMAL

OFF







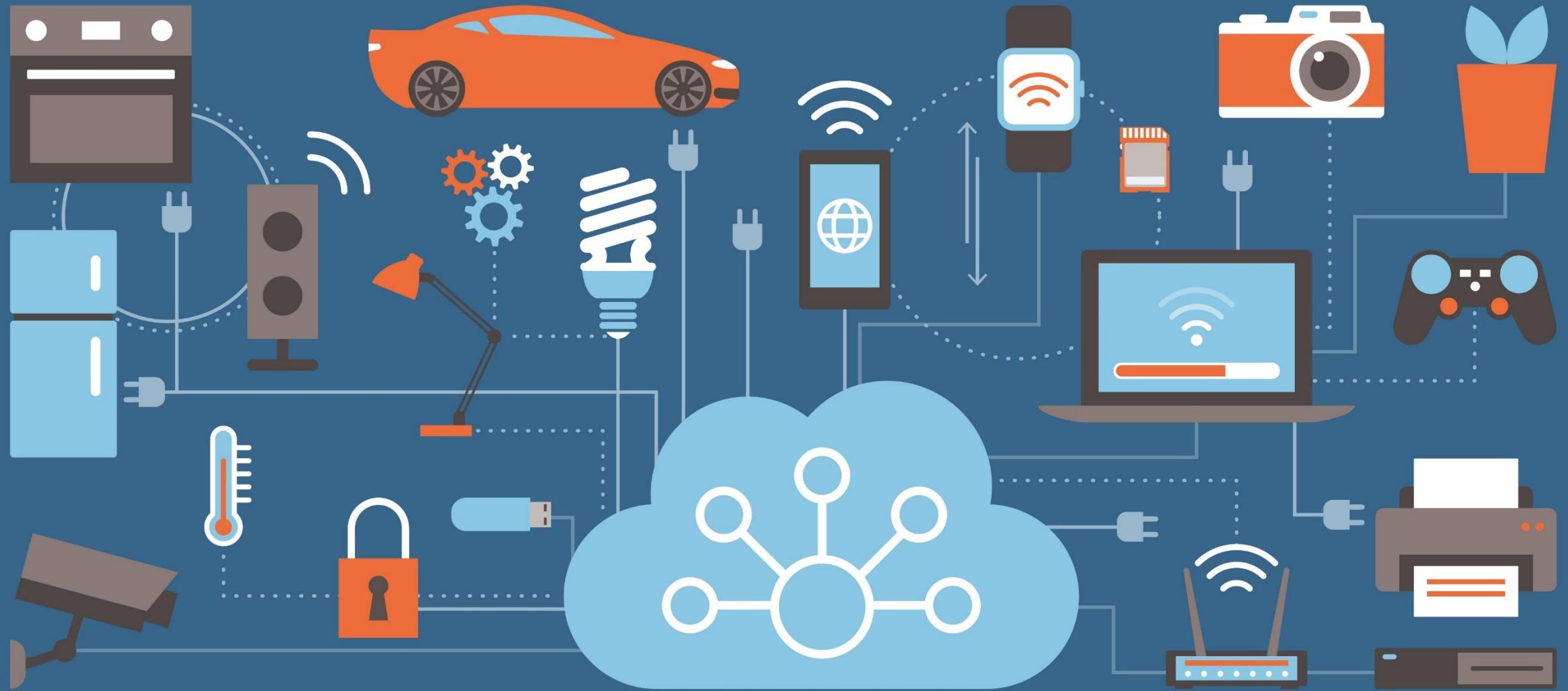


## COW TRACKING



81cows in range  
Range 100m

Map | List







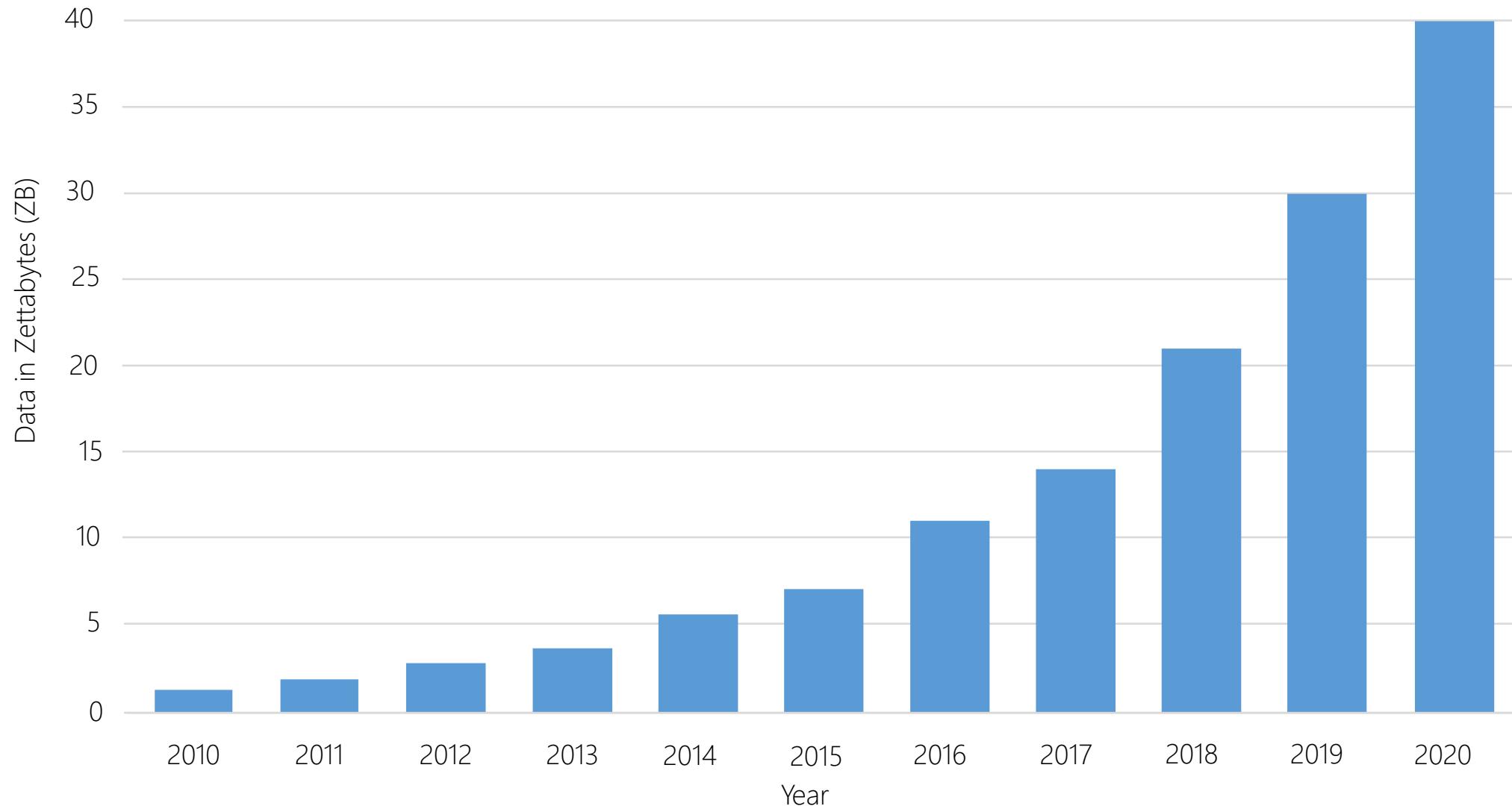
IoT is the body for AI

... but it needs a brain.



**Big Data**

# Global Data Growth

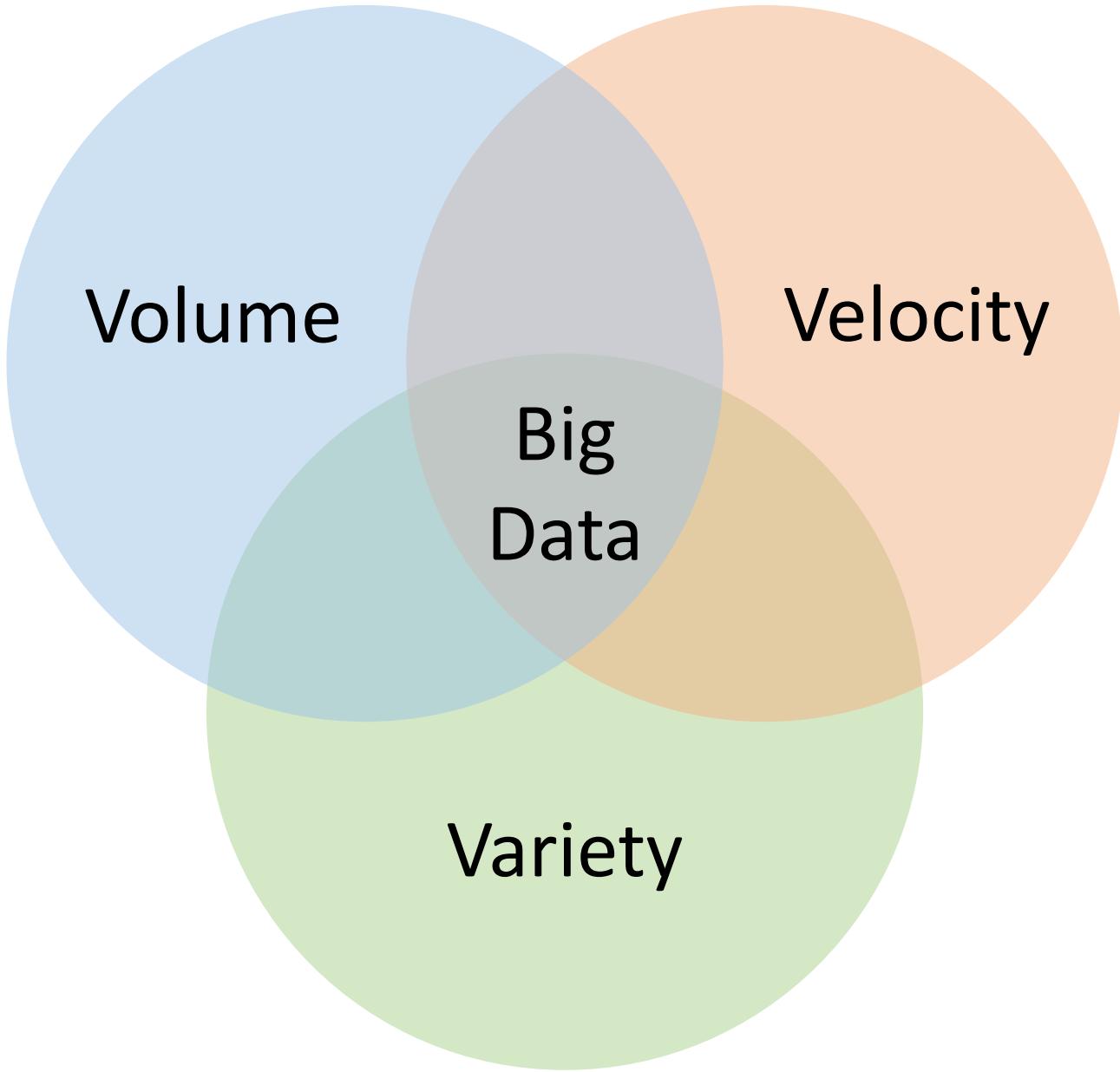


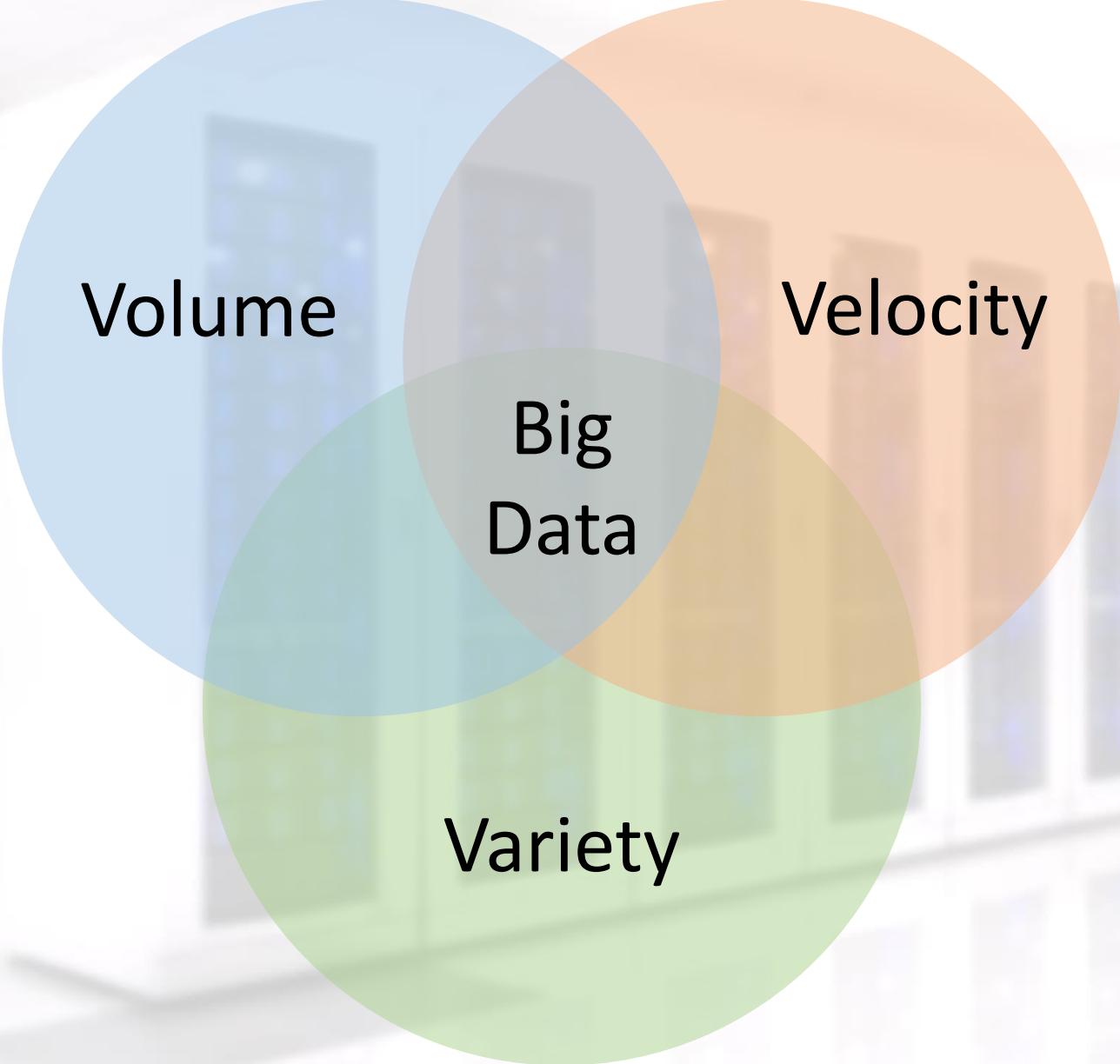
Source: UNECE Statistics Wikis

# Global Data Growth

Doubling every two years







Volume

Velocity

Big  
Data

Variety



Volume

A 3

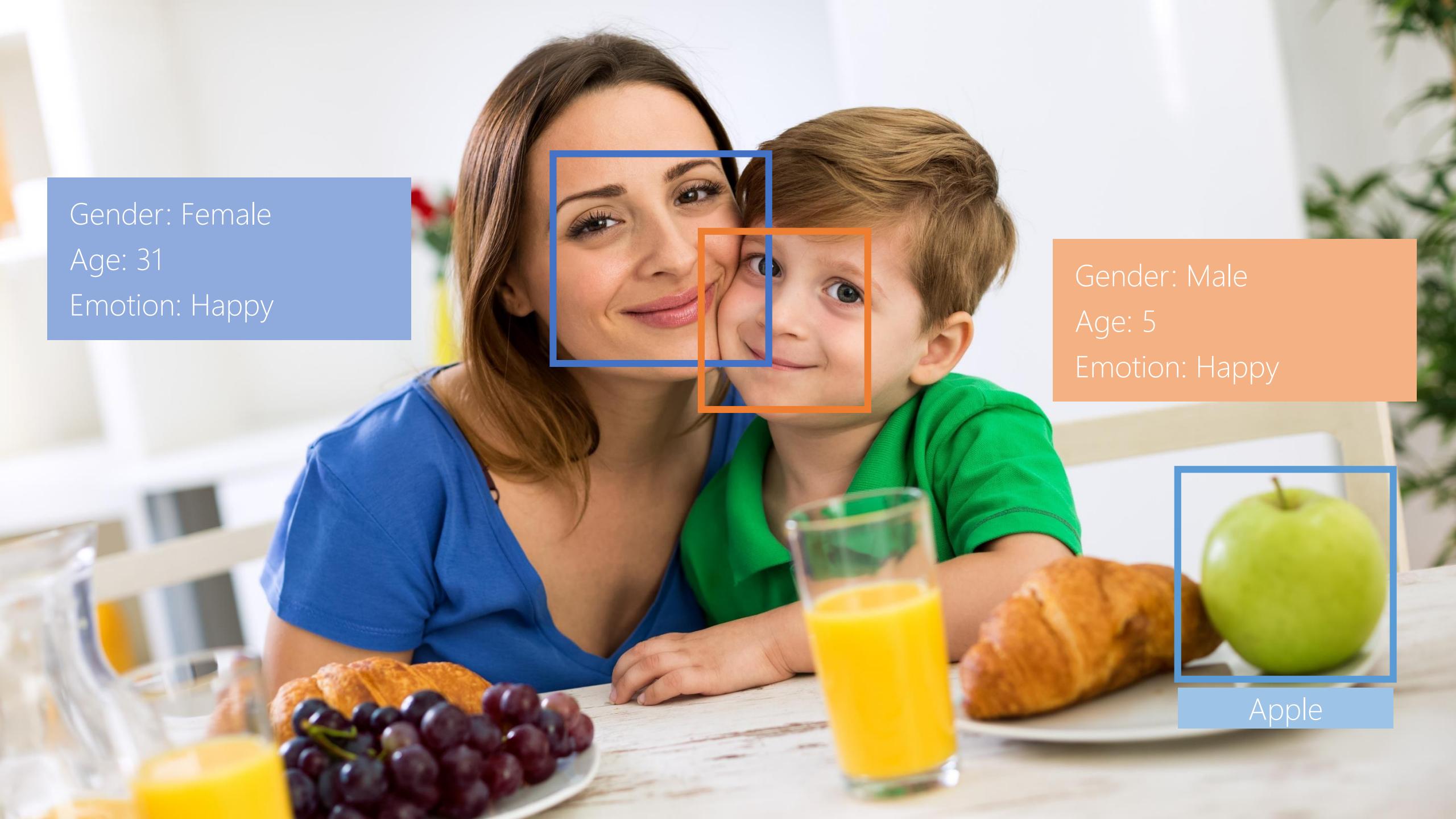


# Velocity





Variety

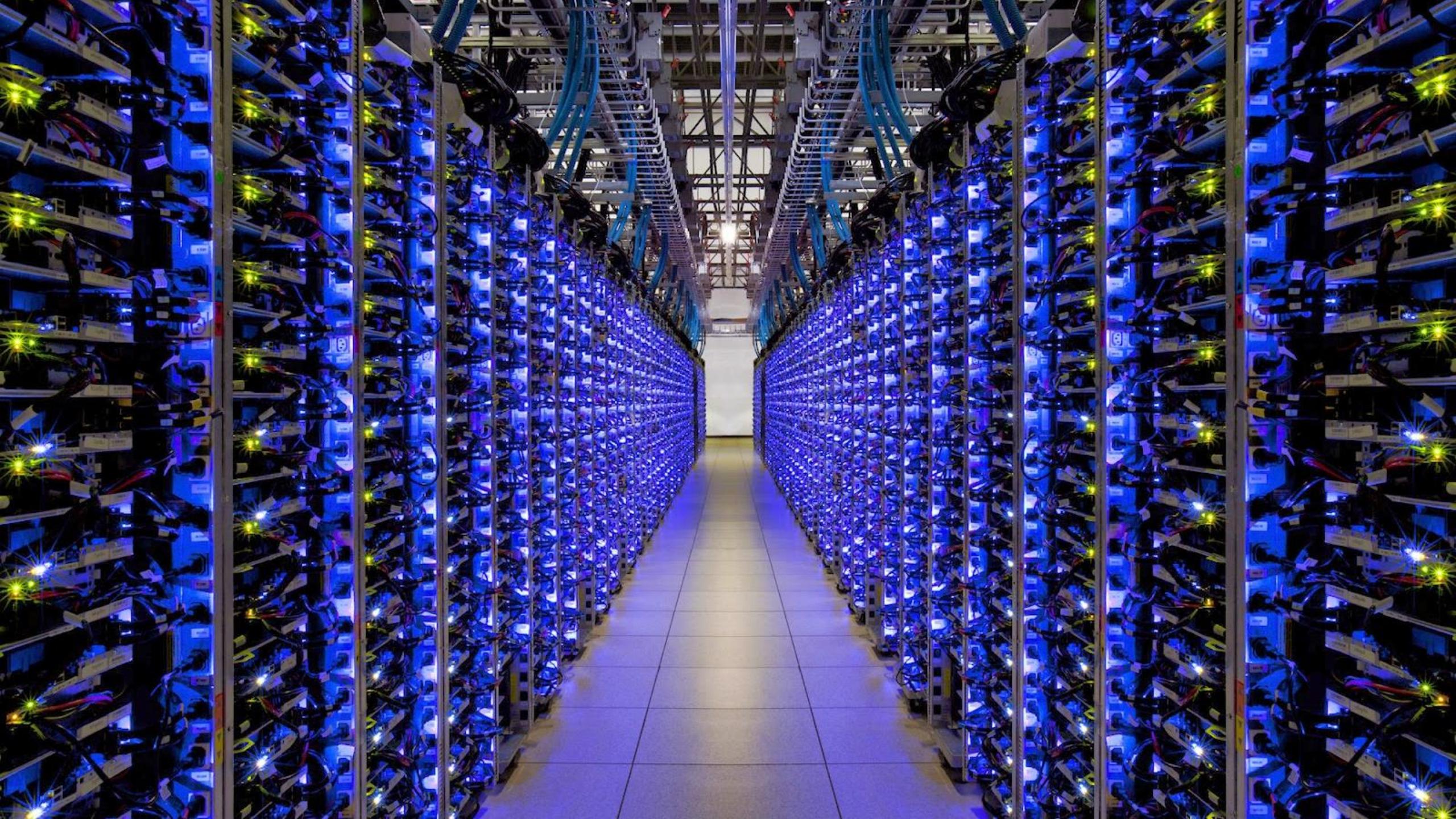


Gender: Female  
Age: 31  
Emotion: Happy

Gender: Male  
Age: 5  
Emotion: Happy



Apple

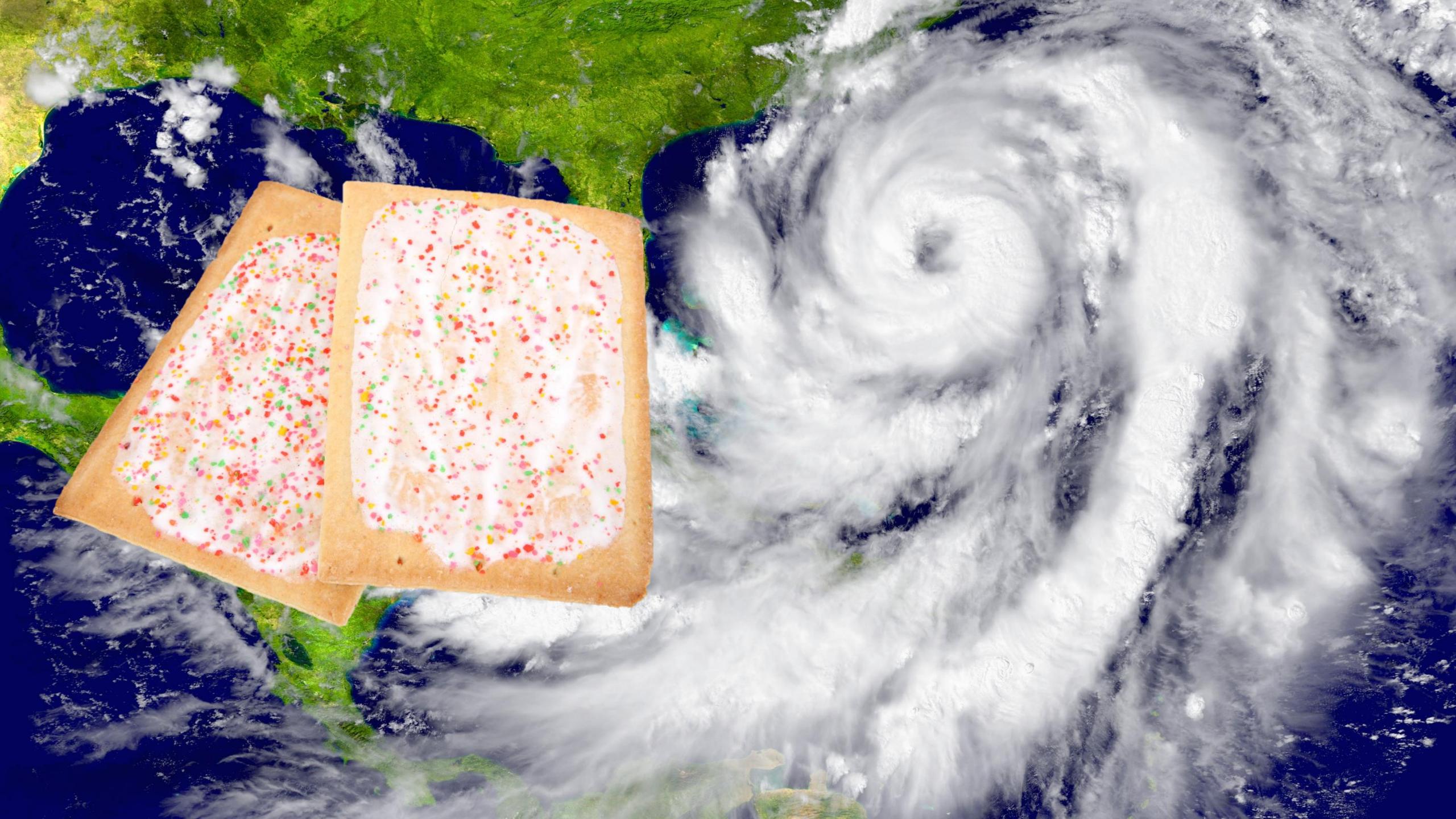






August 2017						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		





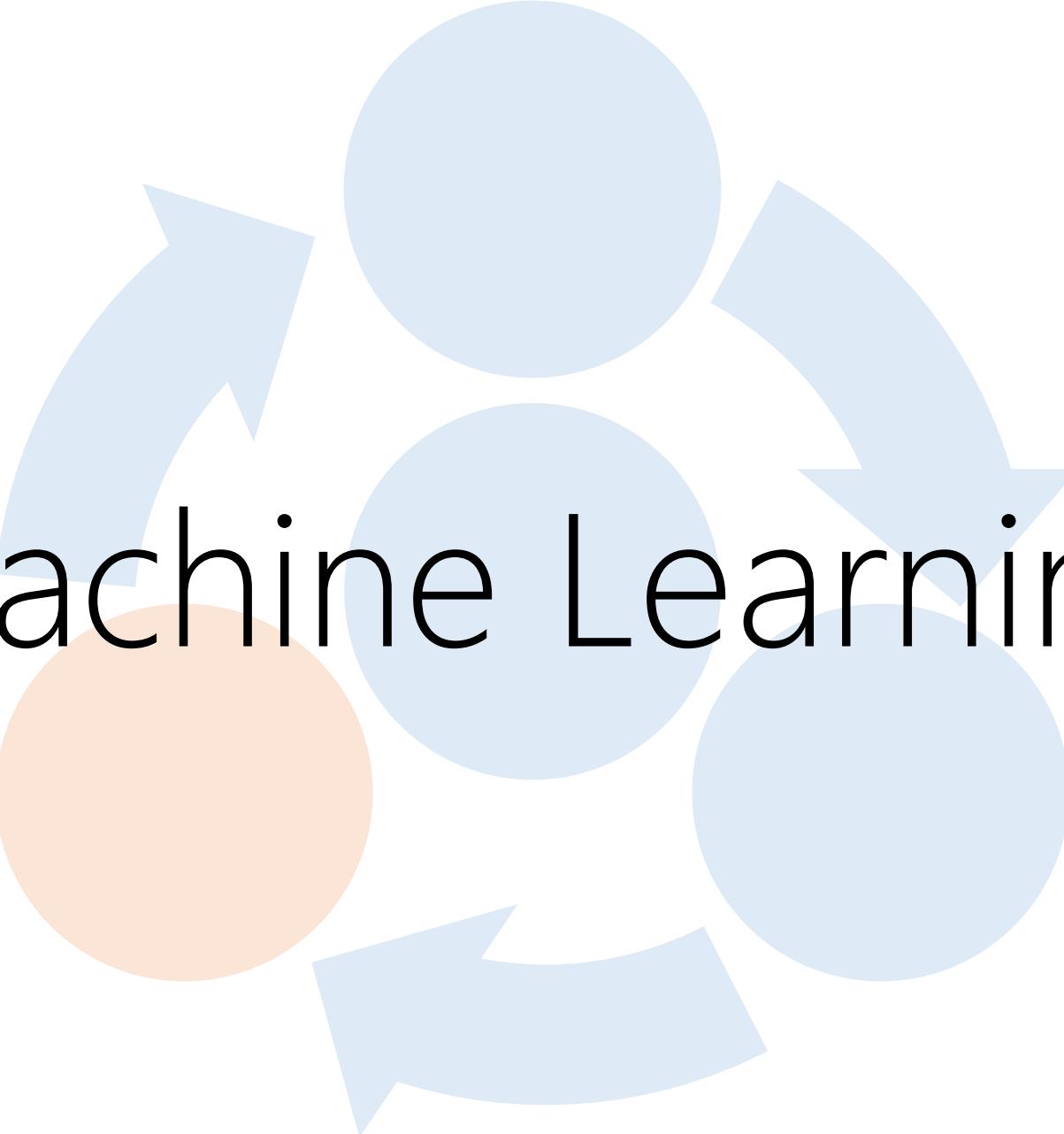




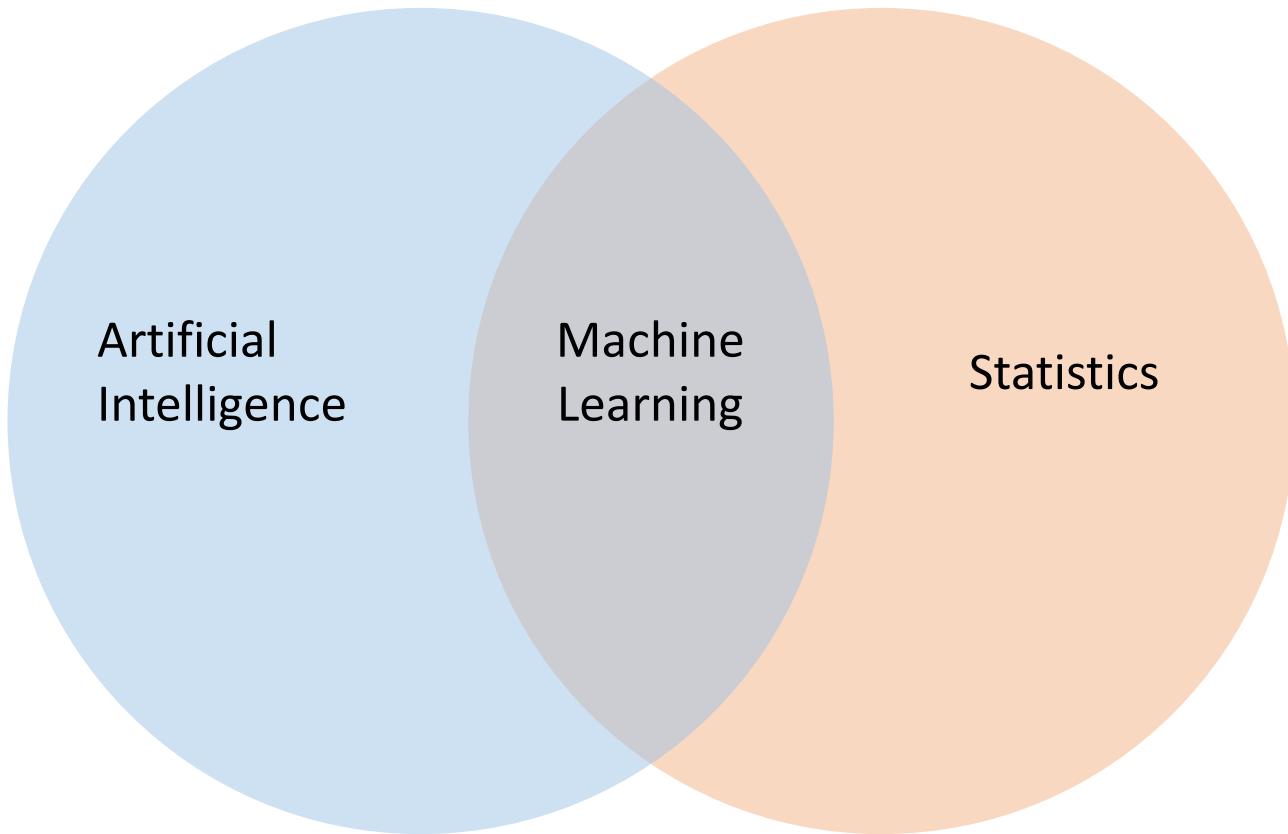
A perspective view of a long row of server racks in a data center. The racks are white with glass doors, showing internal components like hard drives and circuit boards. Blue lights are visible through the glass. The ceiling has a grid of recessed lighting. A sign on the ceiling reads "A 3".

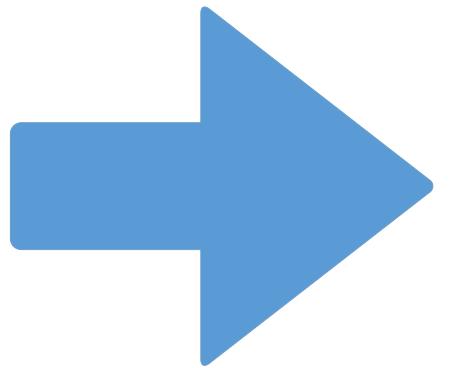
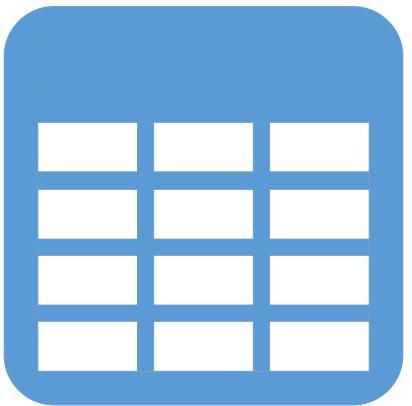
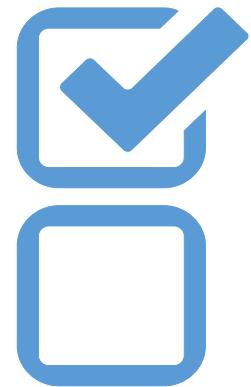
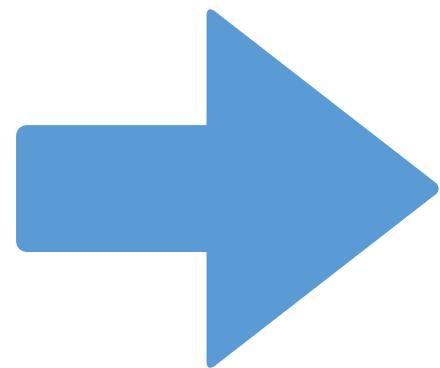
Big Data is the brain for AI

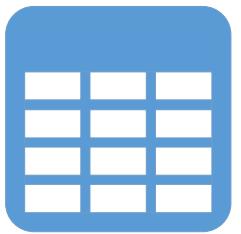
... but it needs a mind.



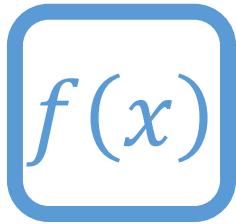
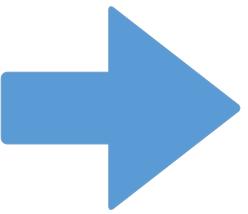
# Machine Learning



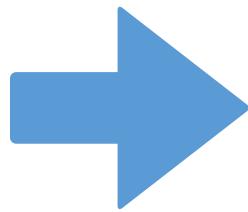
 $f(x)$ 



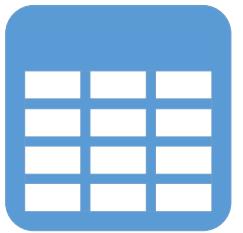
Data



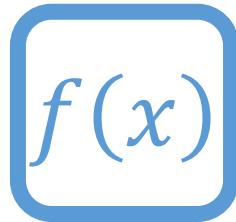
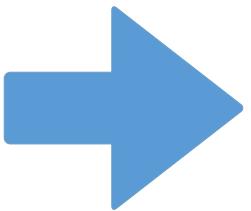
Function



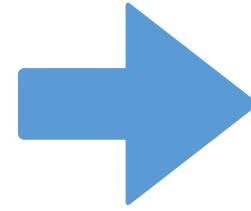
Prediction



Data

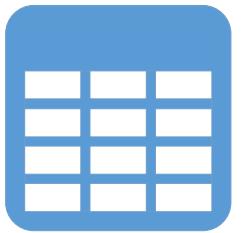


Function

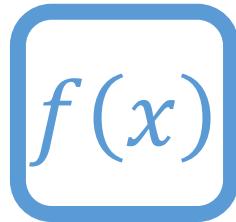
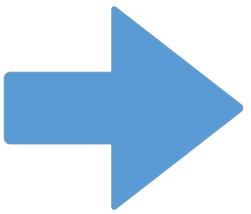


Prediction

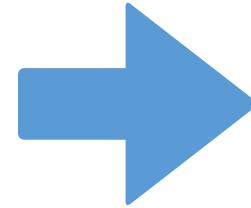




Data



Function



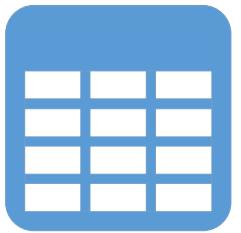
Prediction



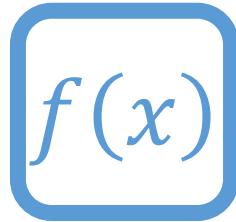
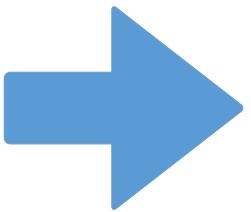
Cat



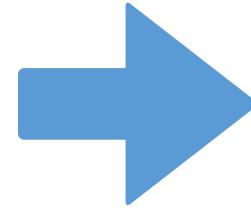
Dog



Data



Function



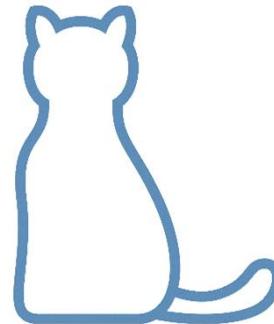
Prediction

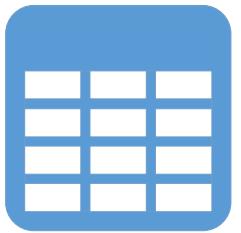


Cat

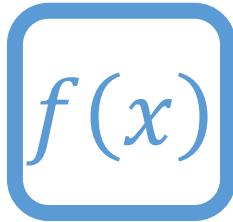
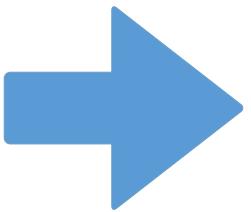


Dog

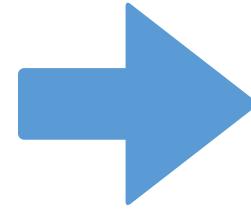




Data



Function



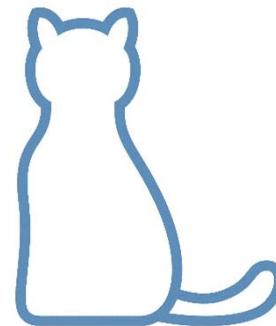
Prediction



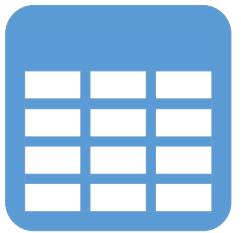
Cat



Dog



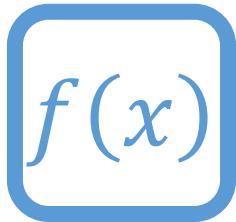
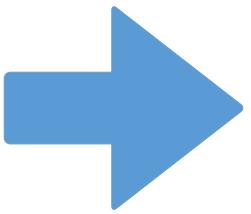
Is cat?



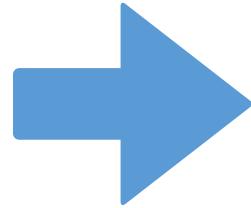
Data



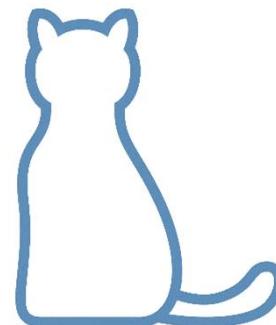
Cat



Function



Prediction

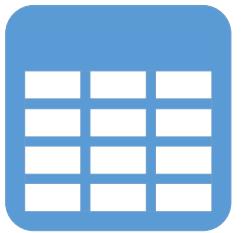


Is cat?



Dog

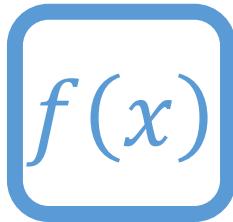
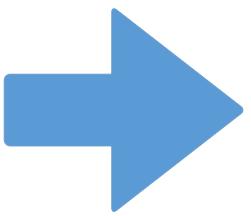




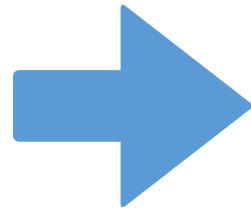
Data



Cat



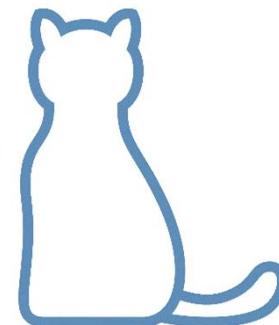
Function



Prediction



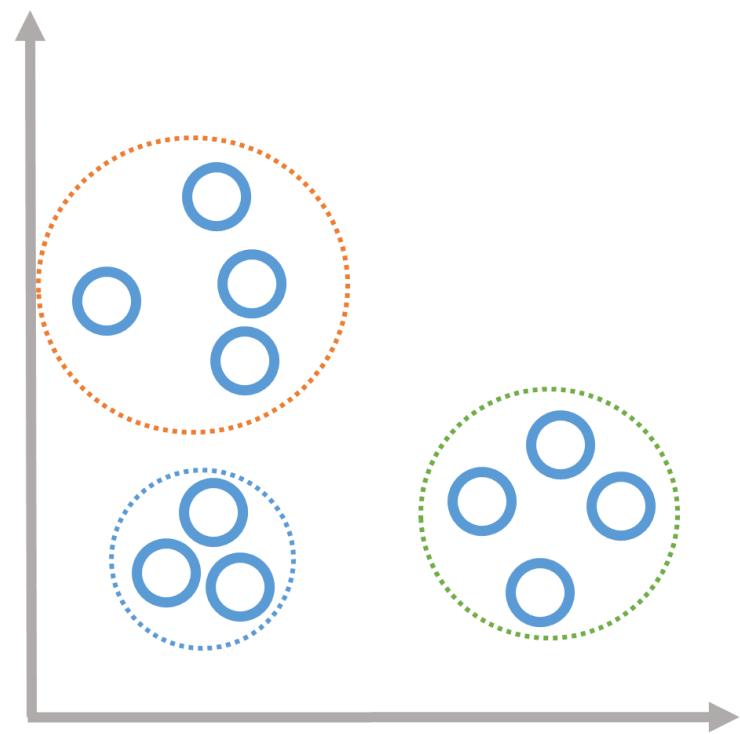
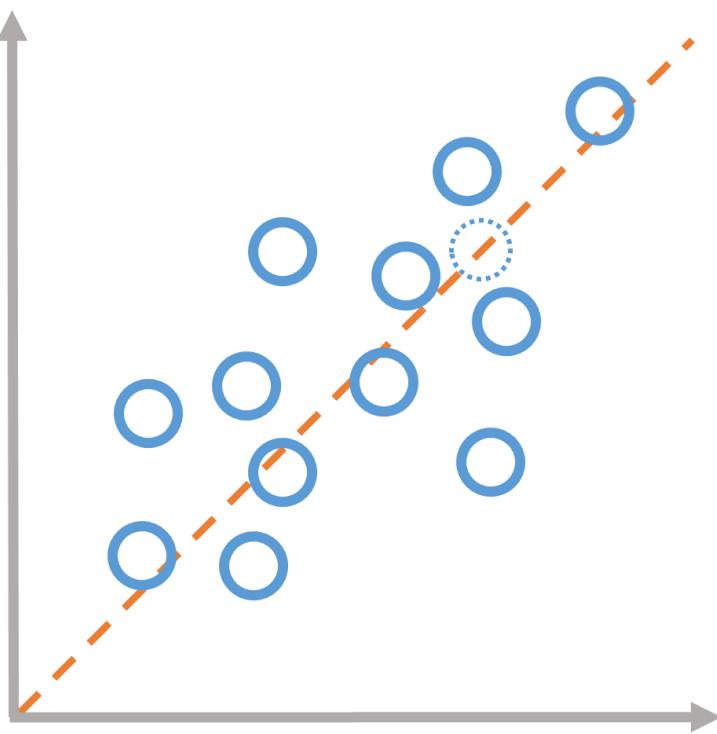
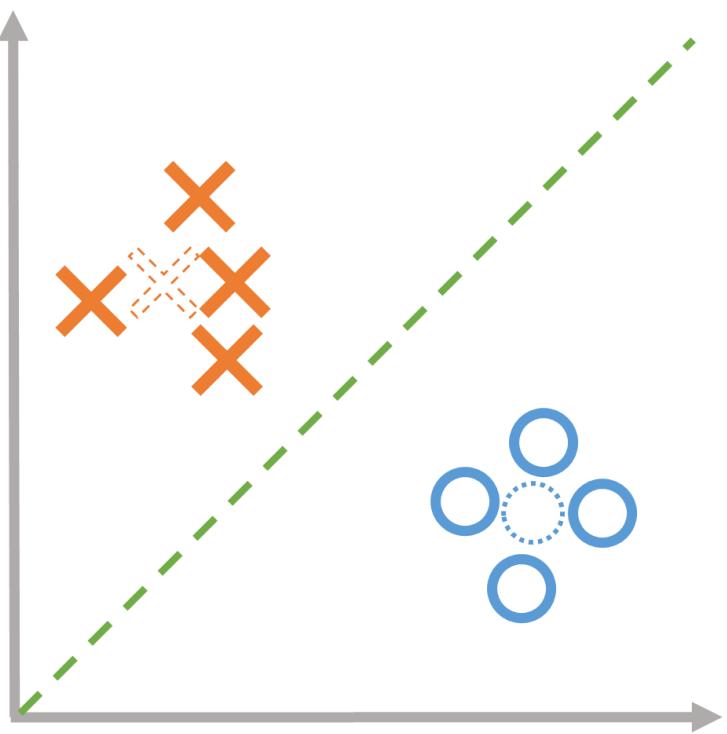
Dog

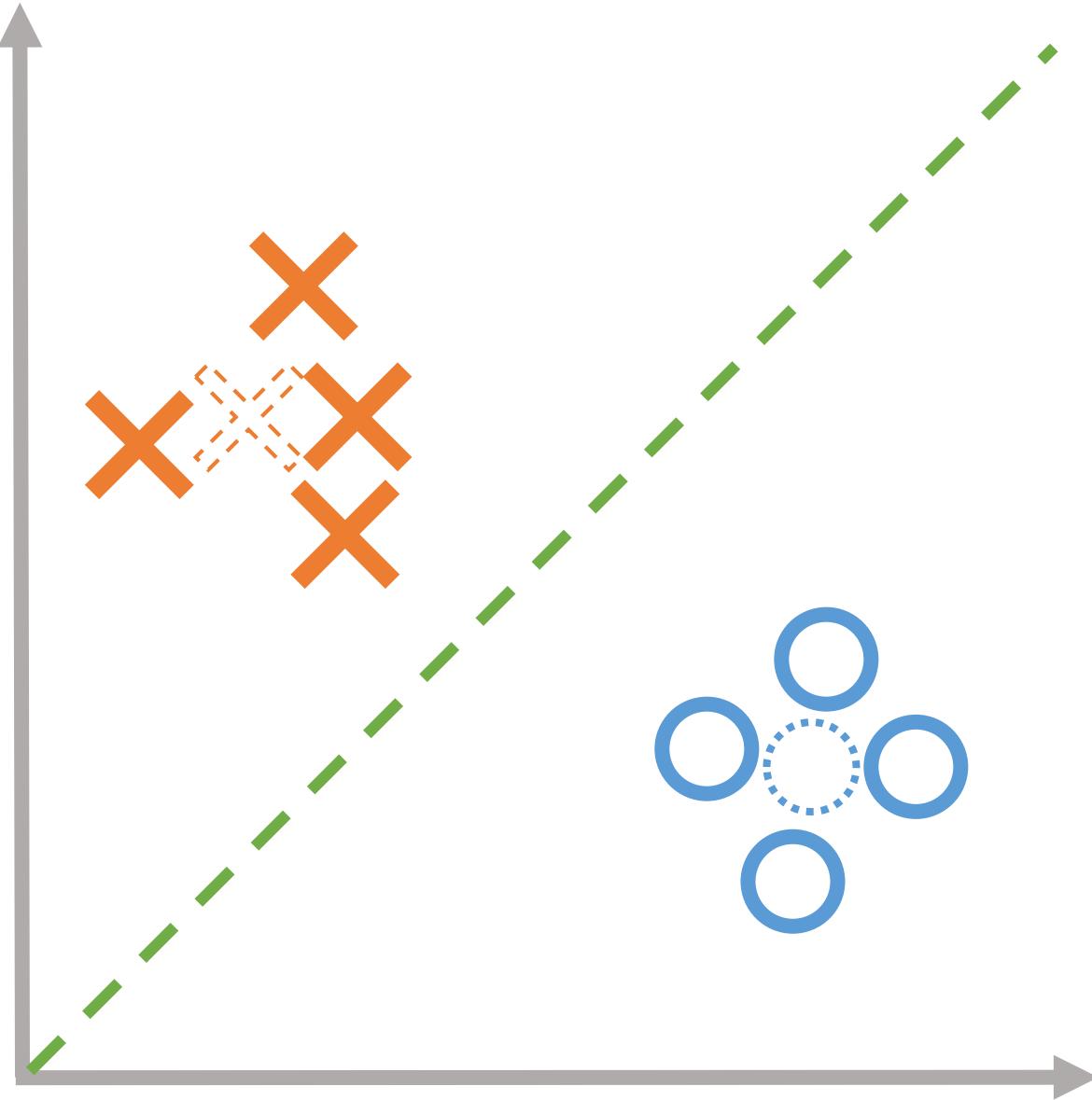


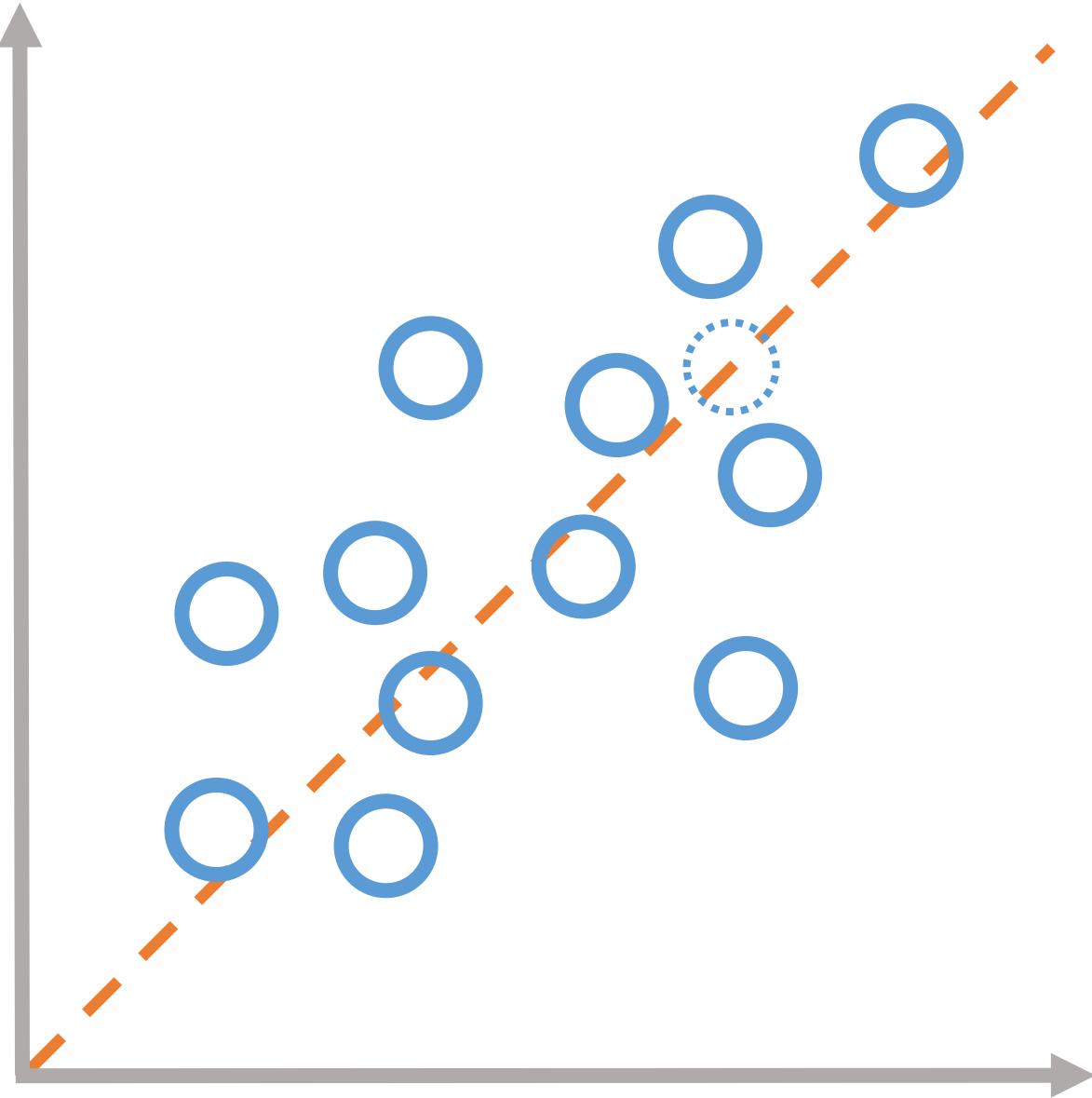
Is cat?

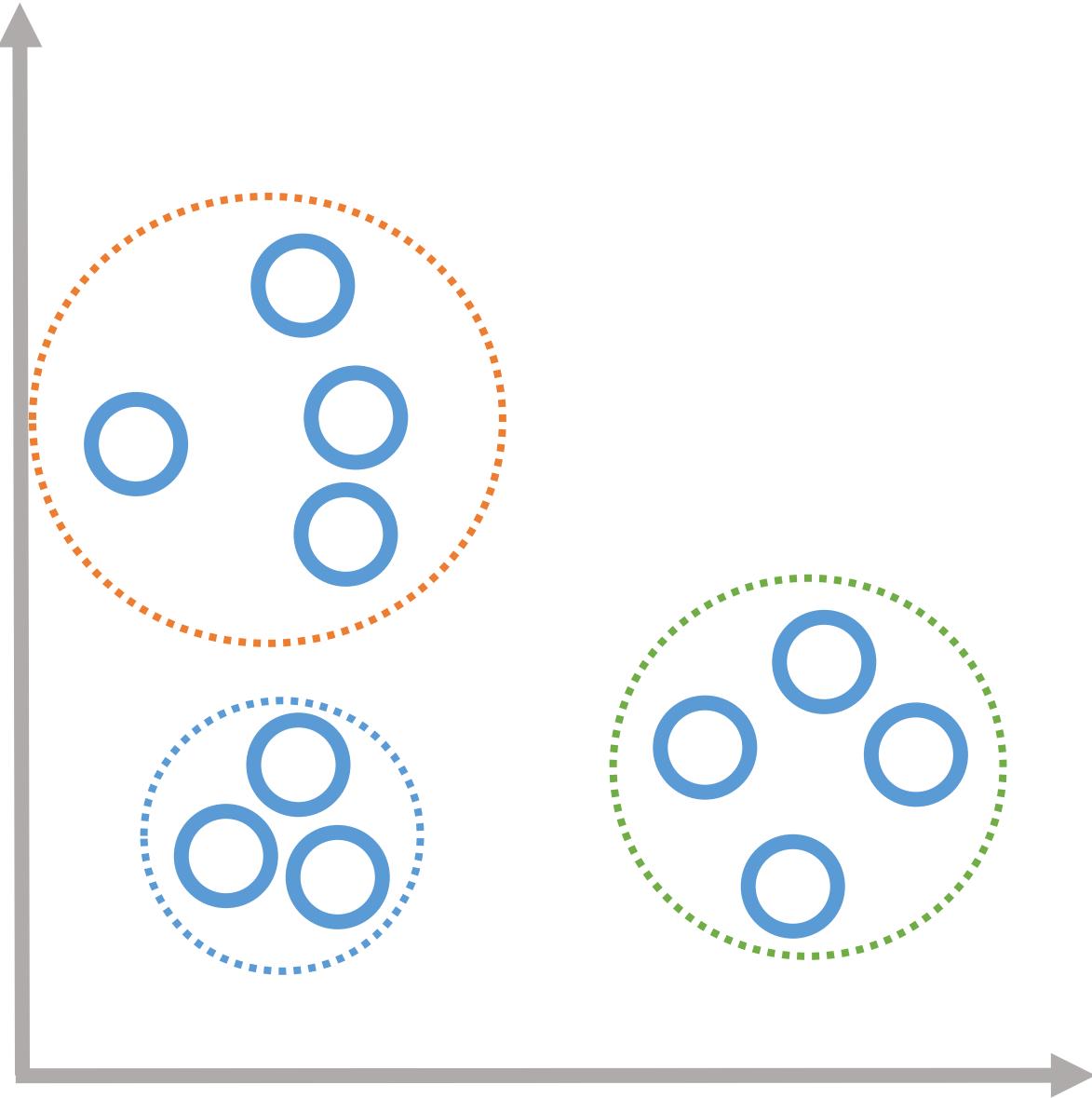


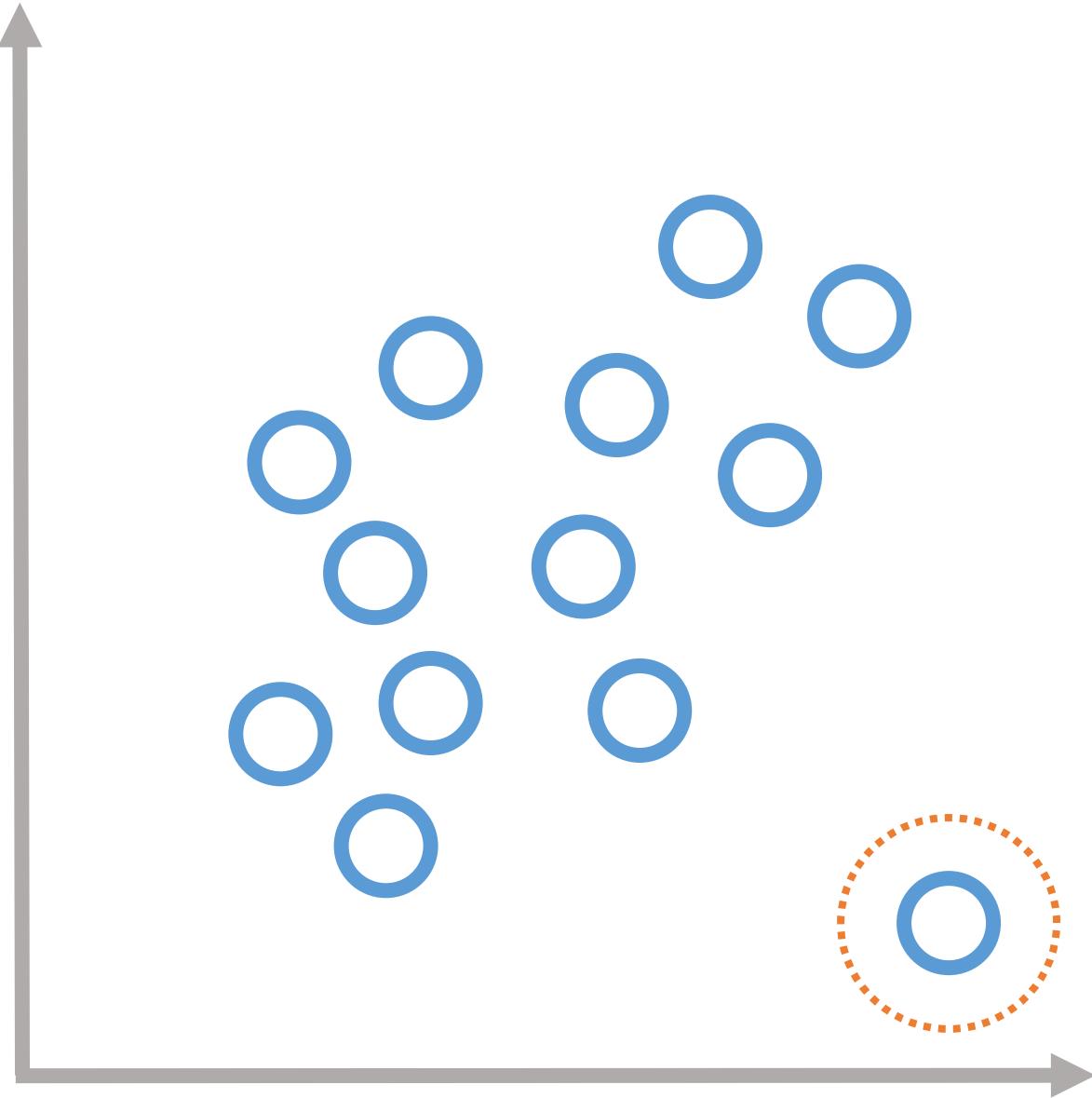
Yes

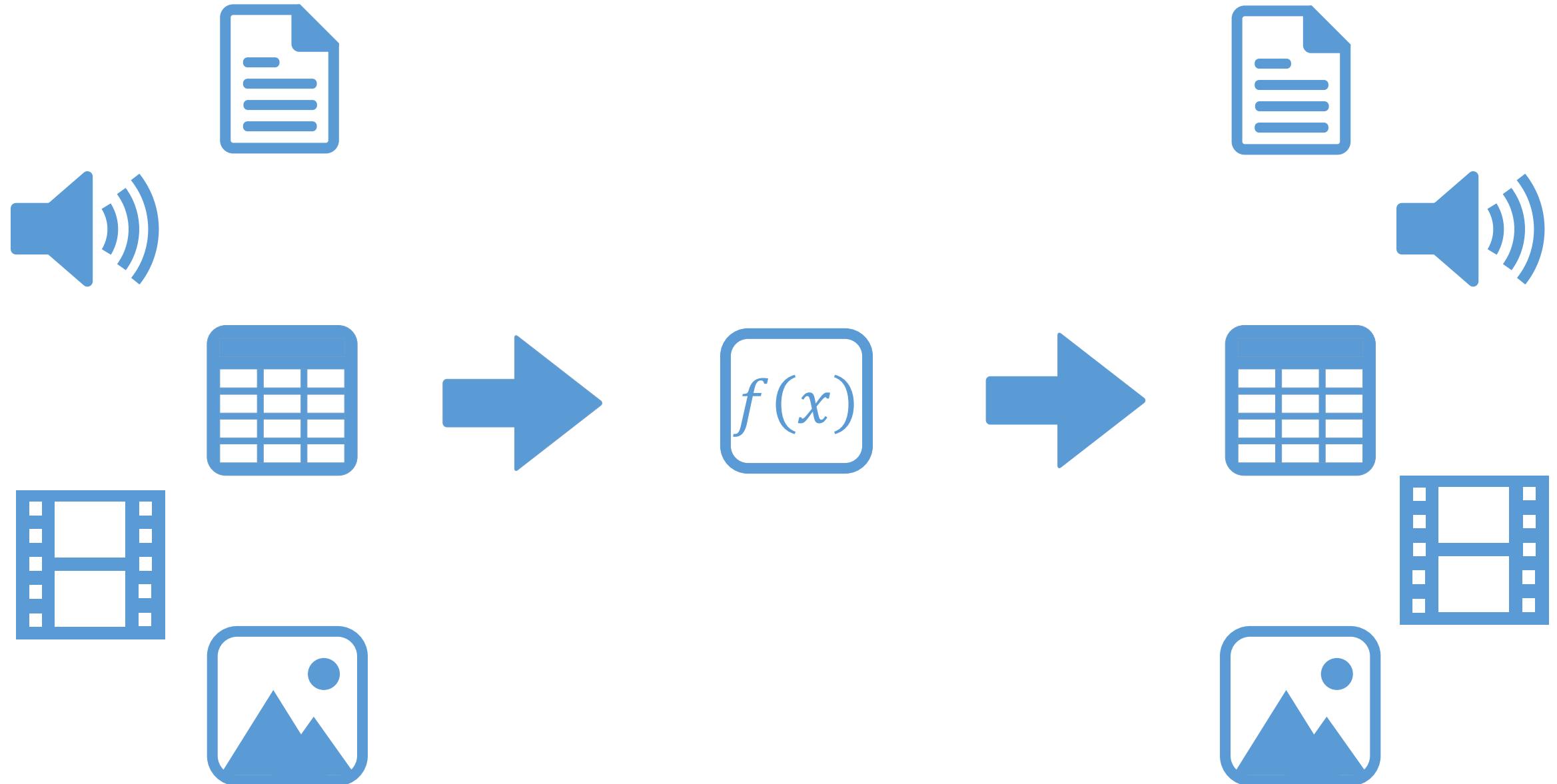


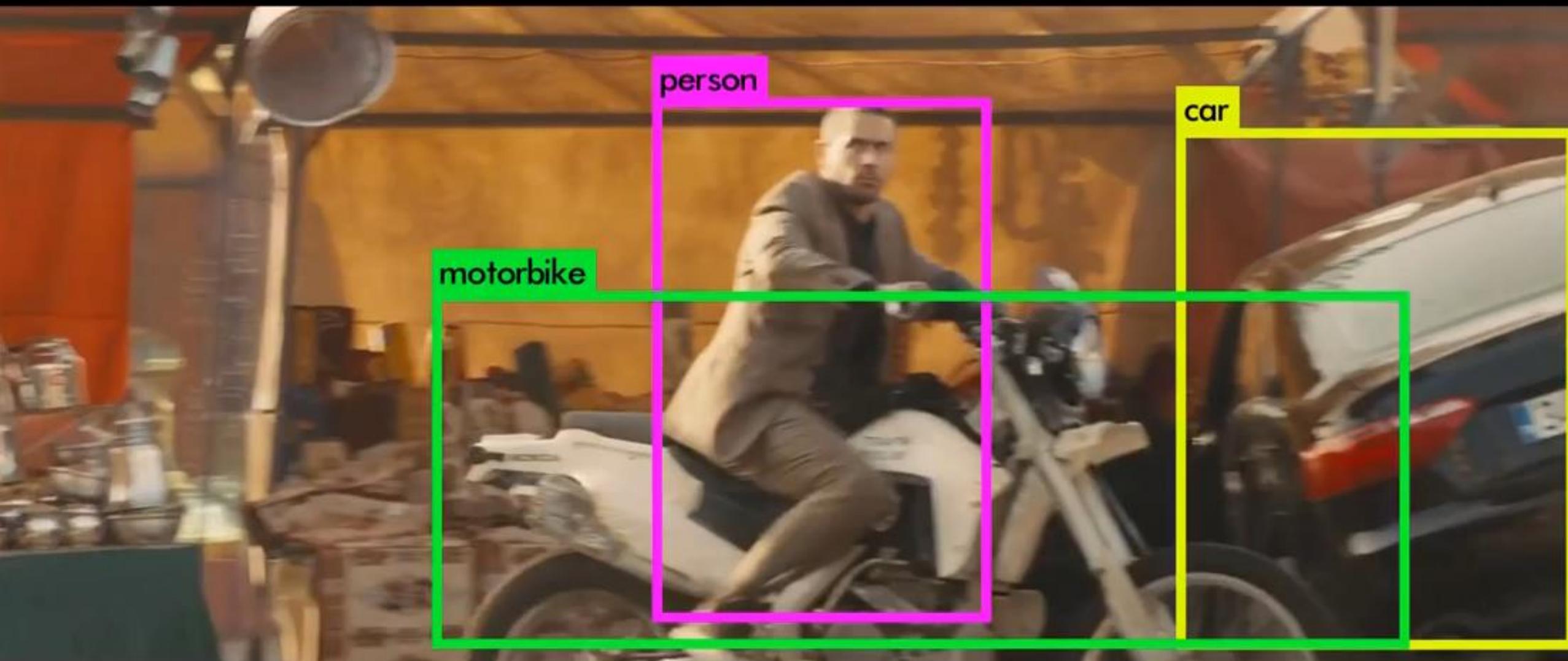


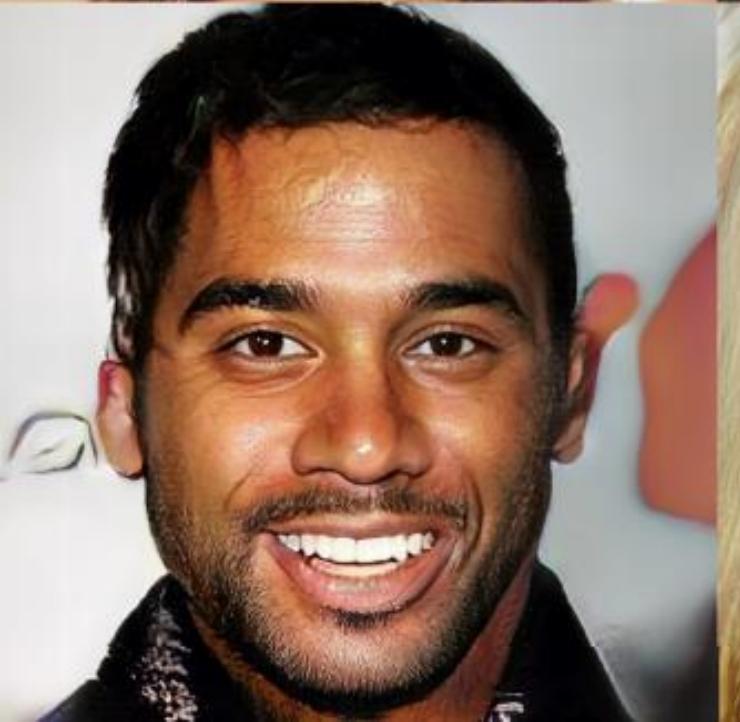










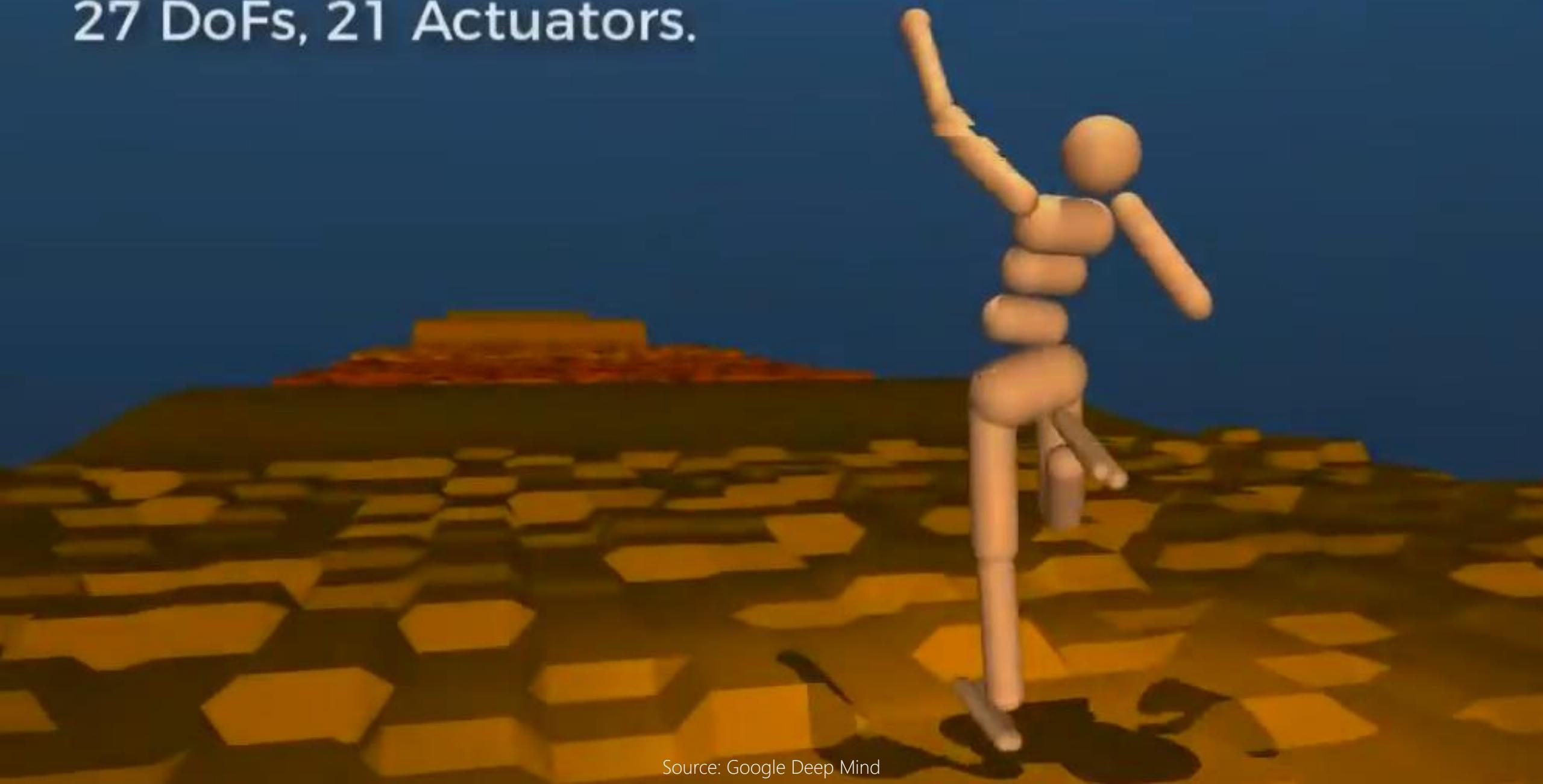


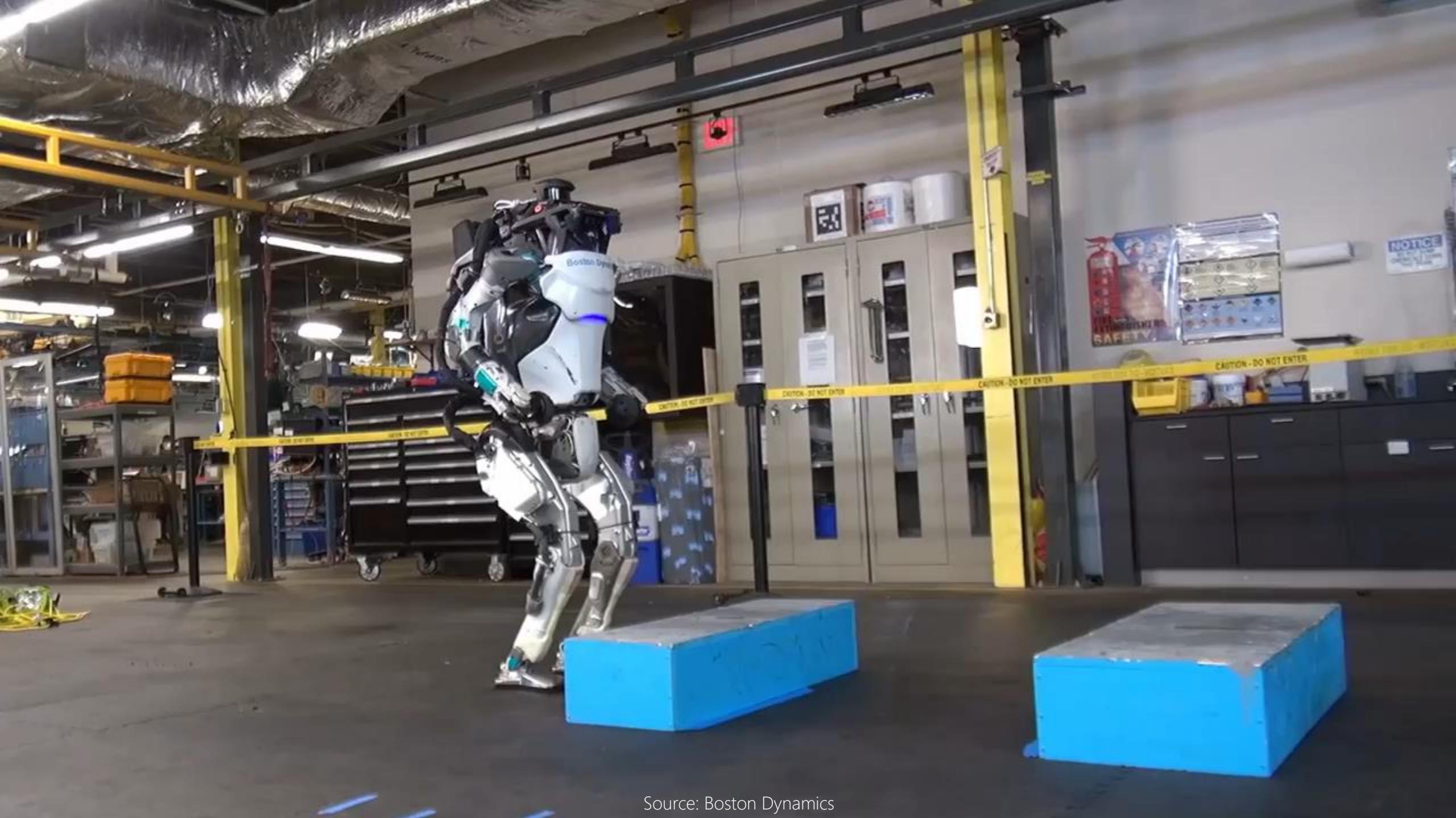
Source: Nvidia



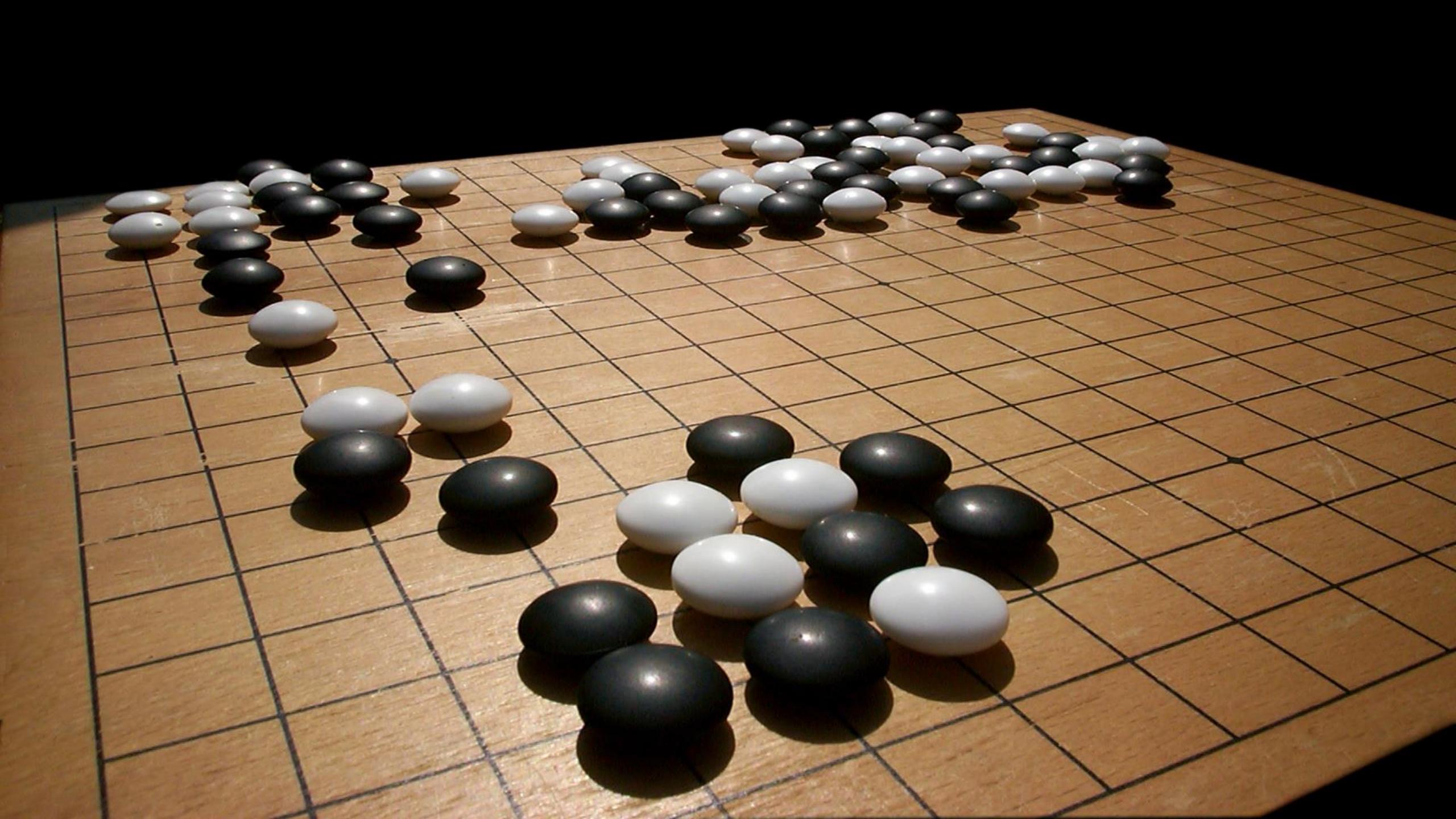


Humanoid:  
27 DoFs, 21 Actuators.



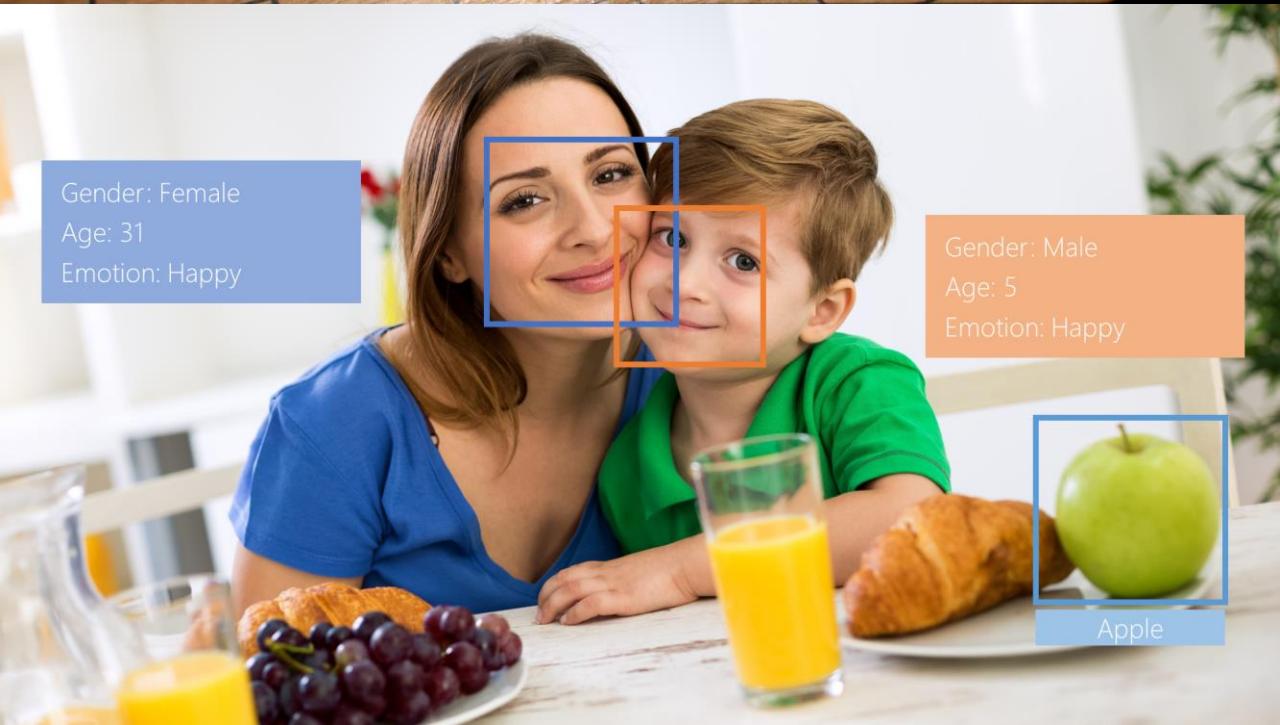
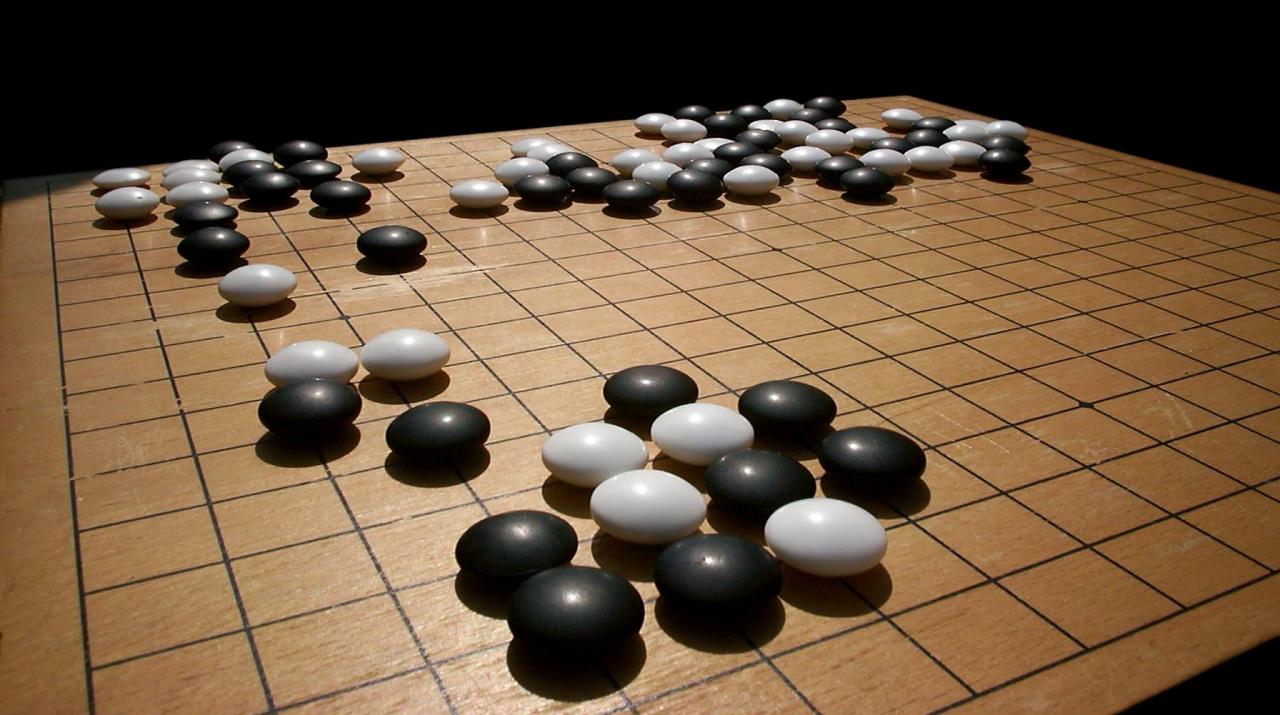


Source: Boston Dynamics











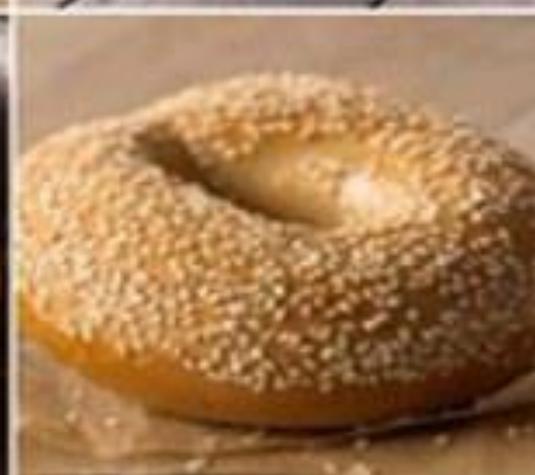


**CAUTION**





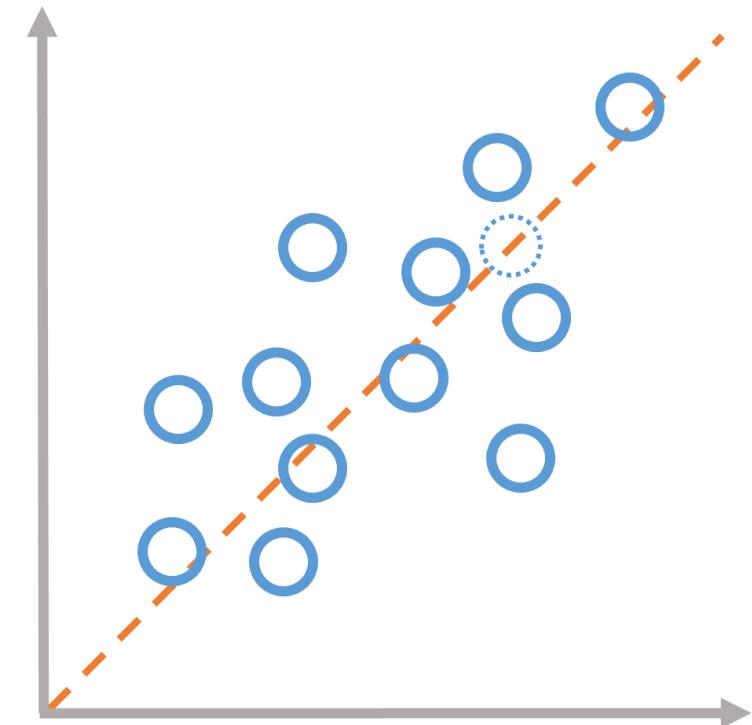
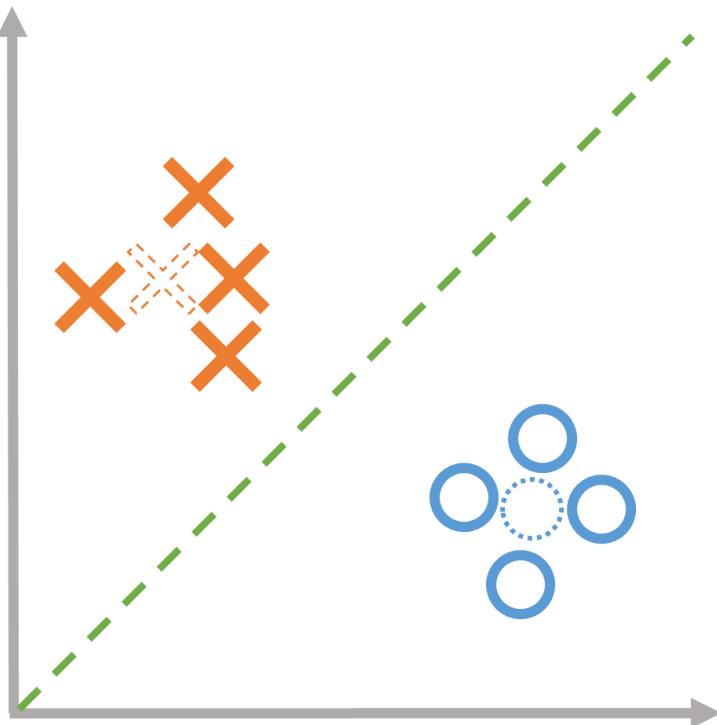
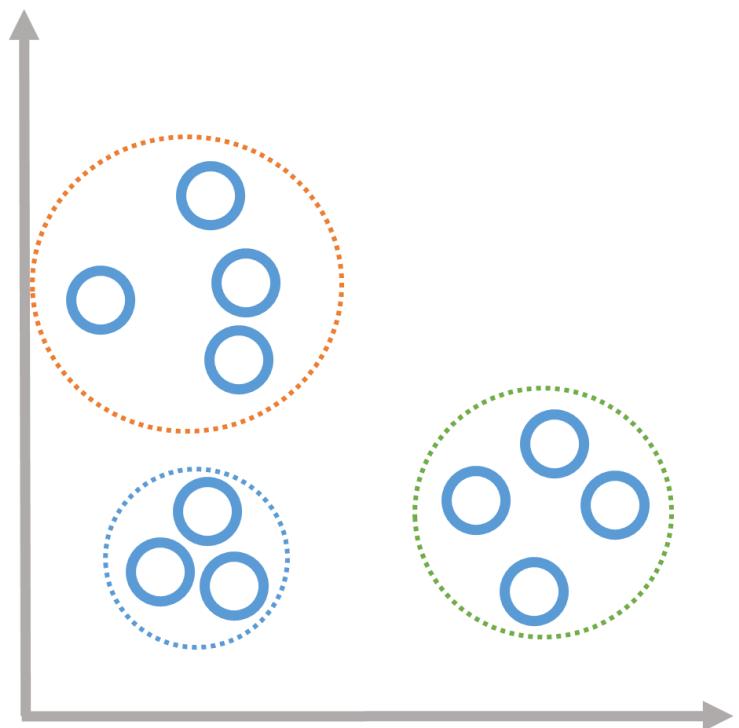






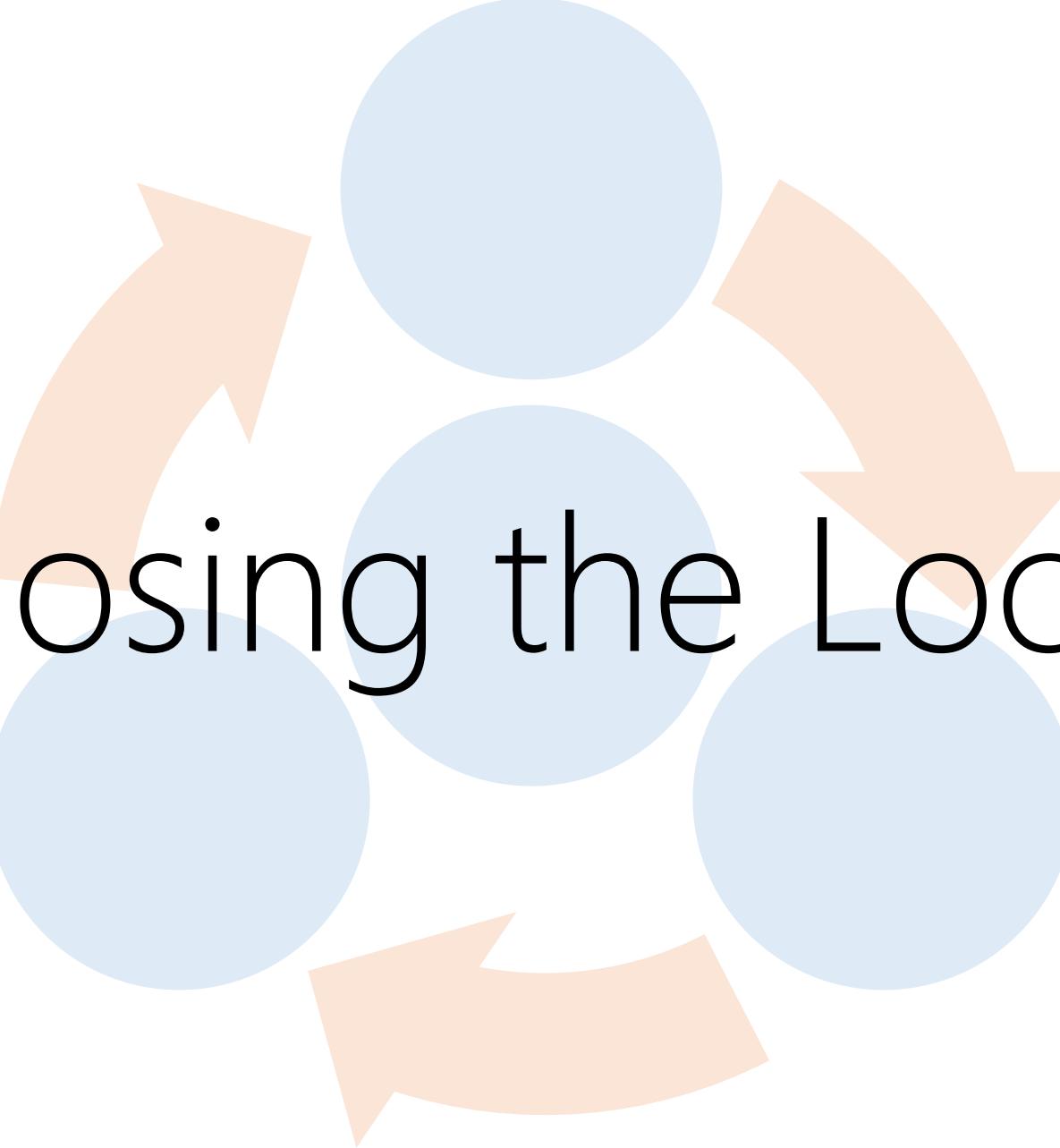


Source: Pouff - Grocery Trip

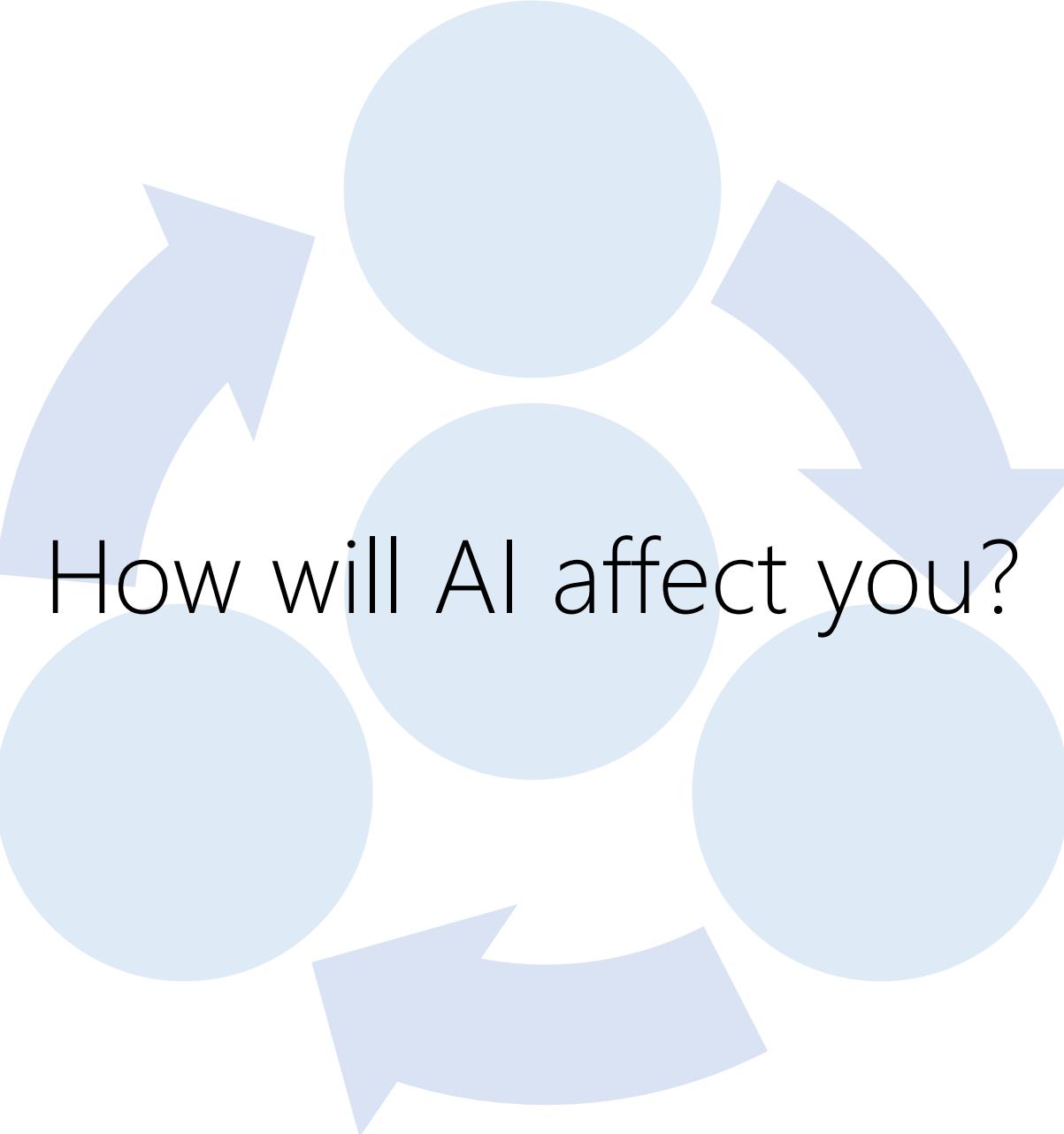


Machine learning is the mind for AI

... but it needs life.

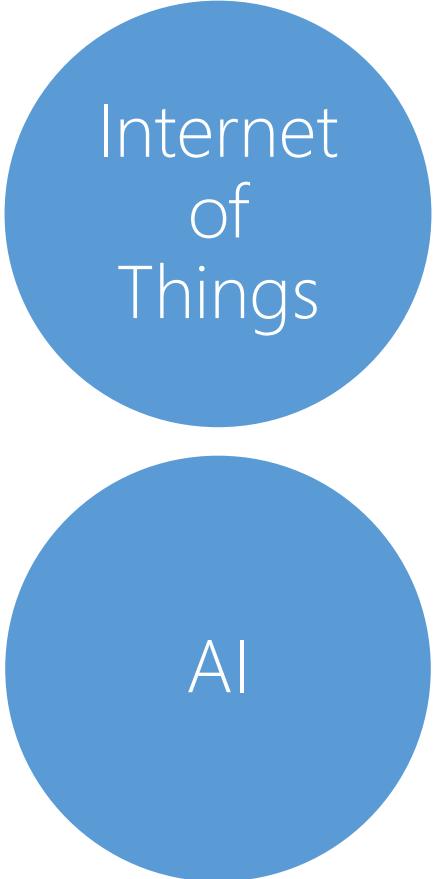


Closing the Loop



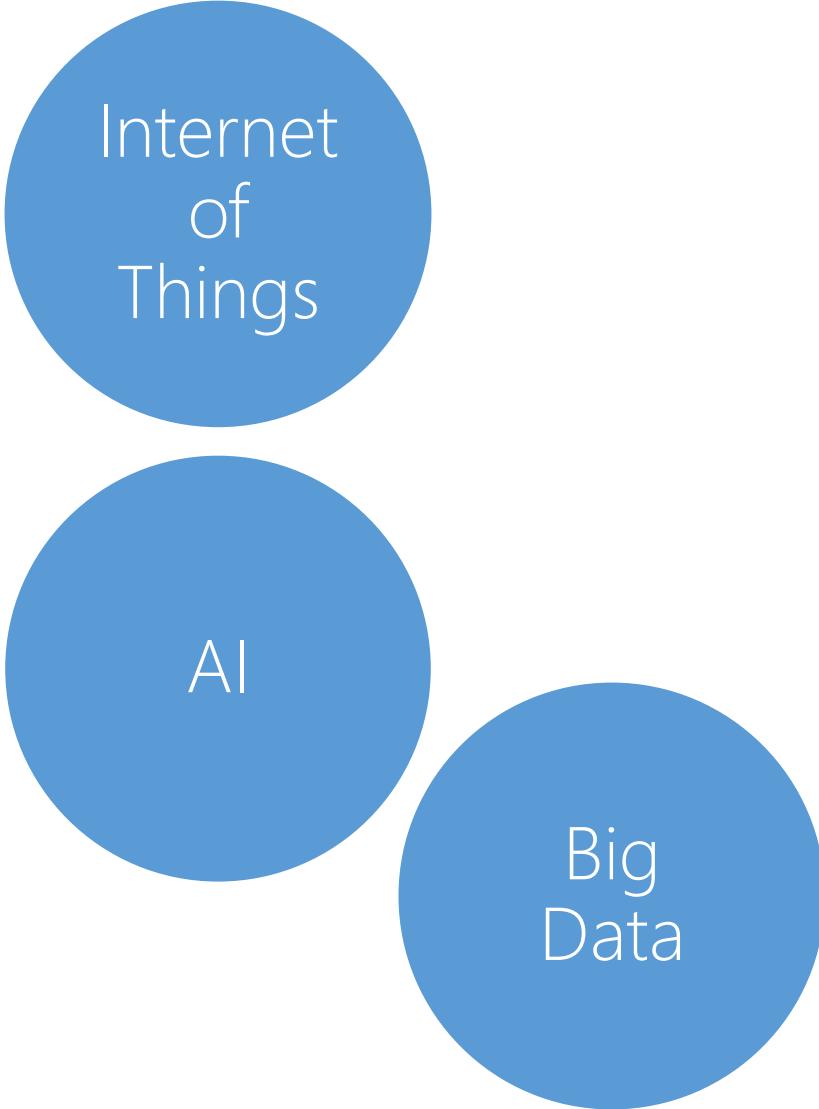
How will AI affect you?

AI



Internet  
of  
Things

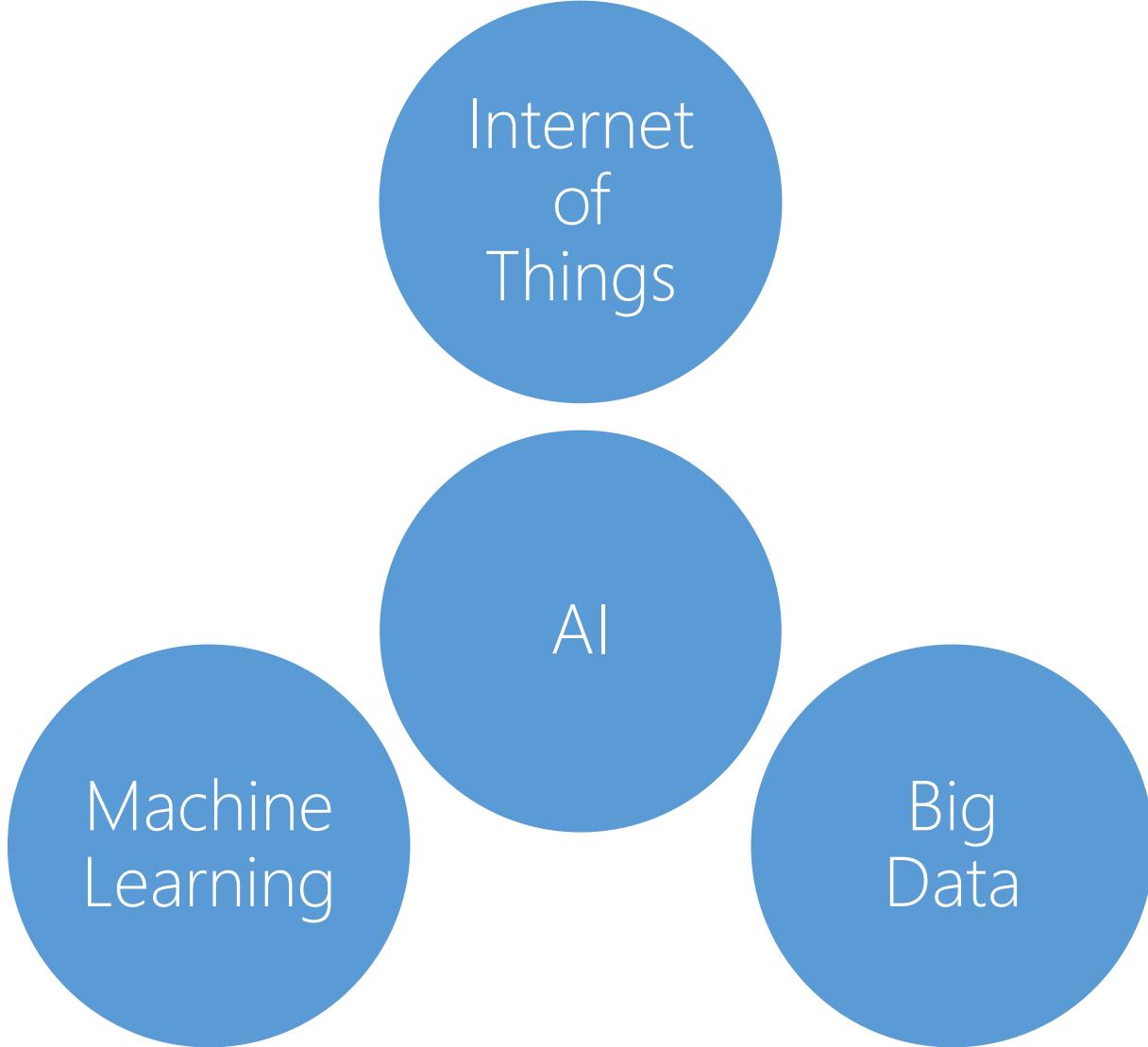
AI



Internet  
of  
Things

AI

Big  
Data

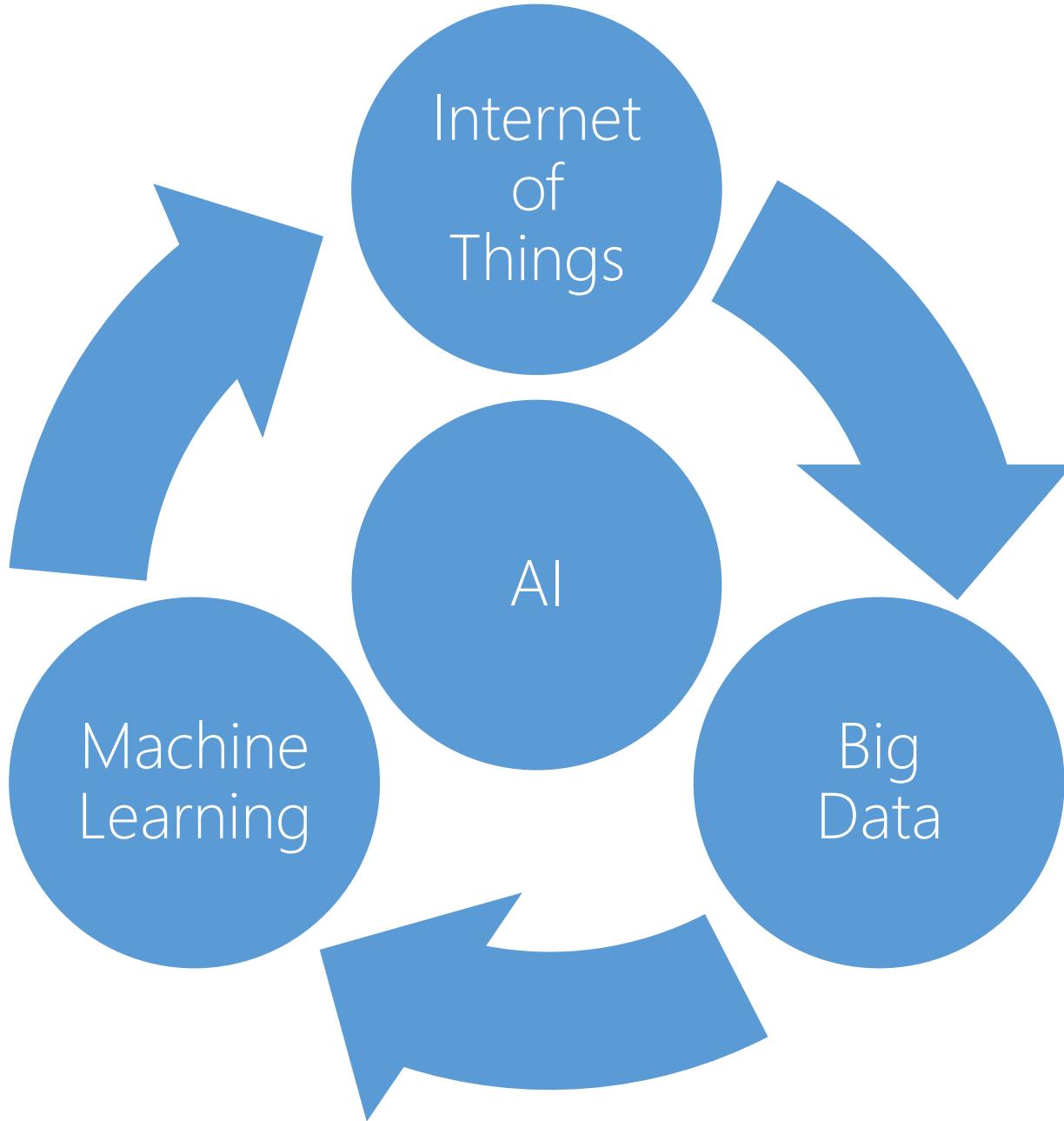


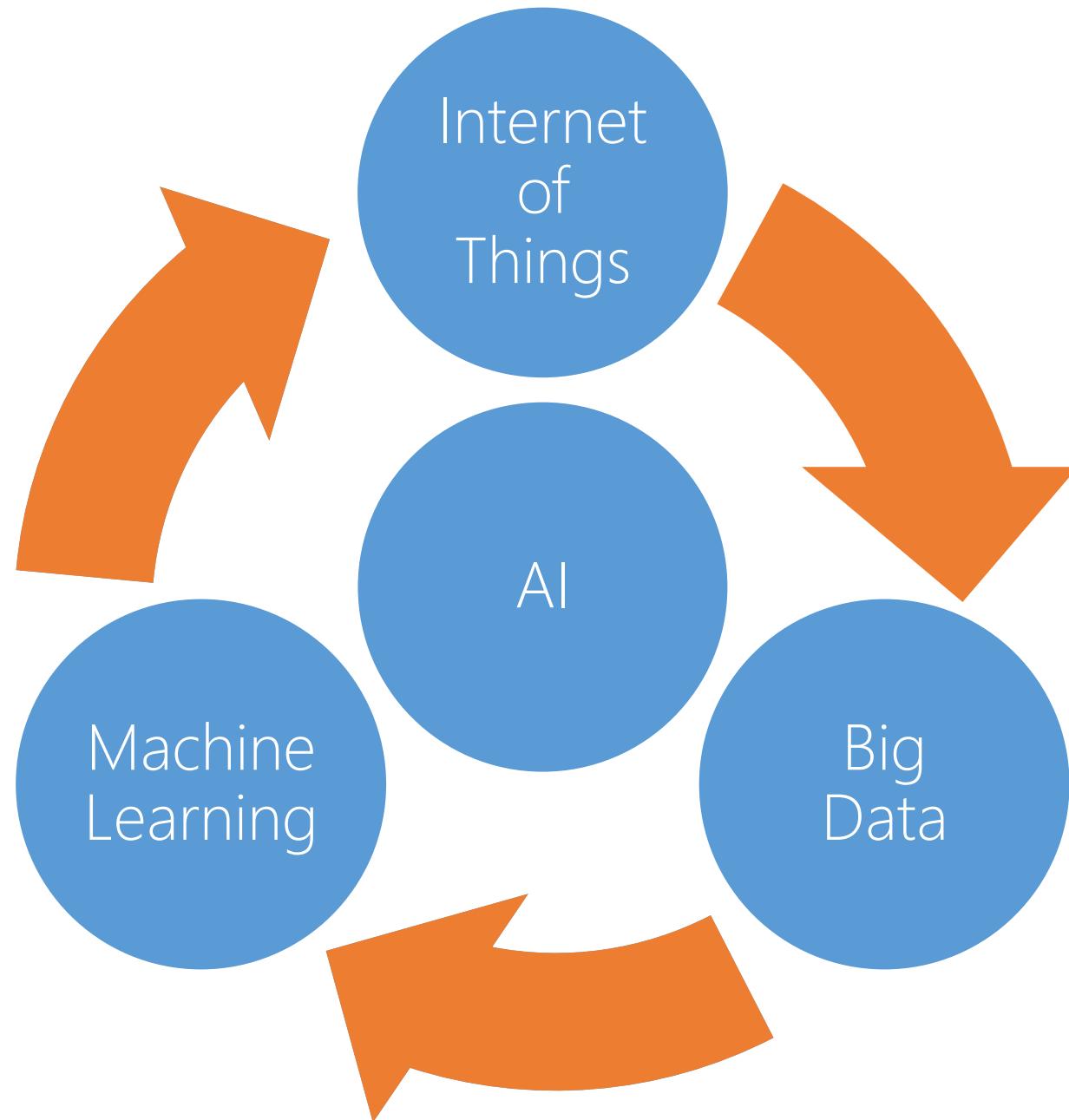
Internet  
of  
Things

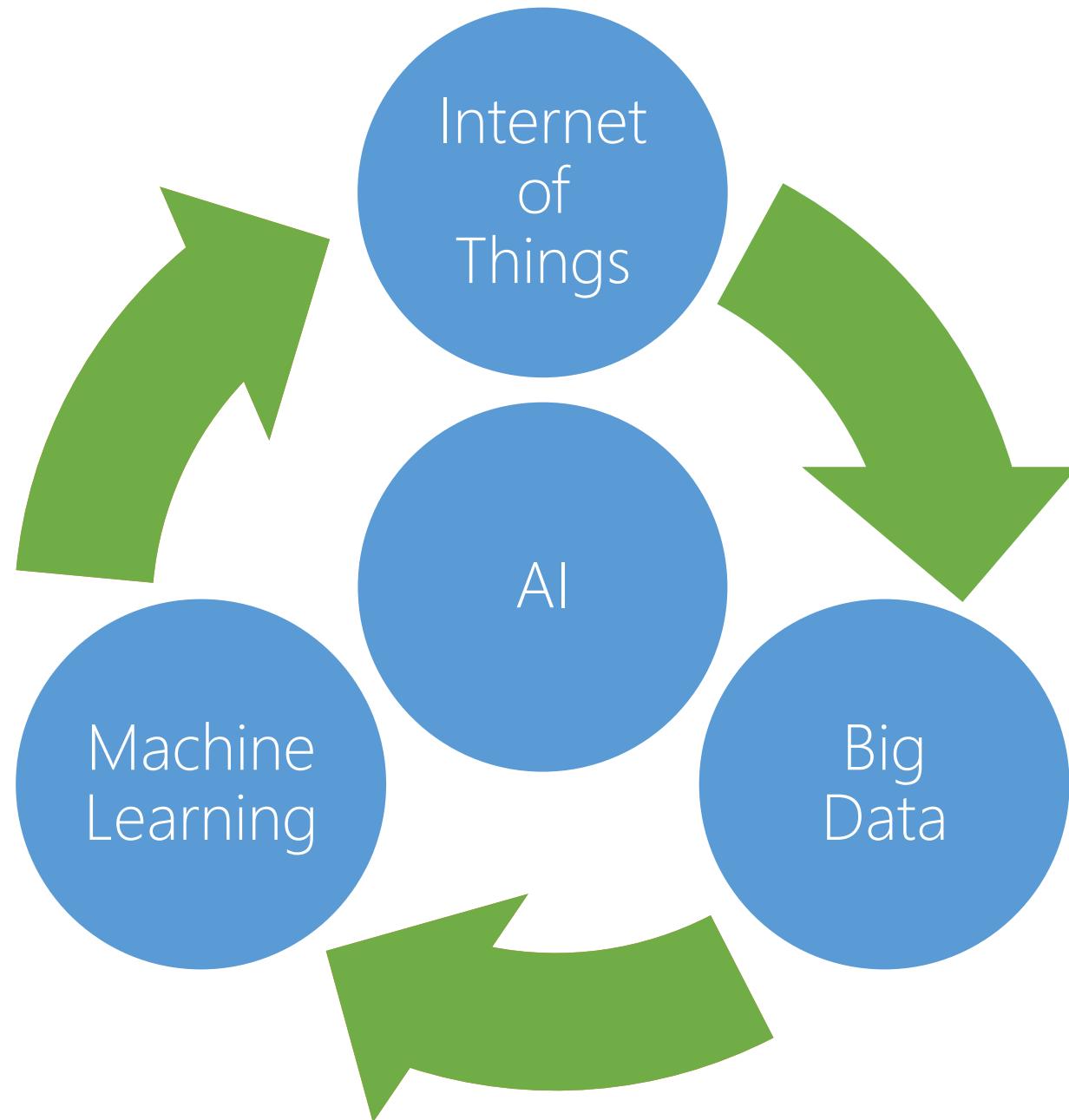
AI

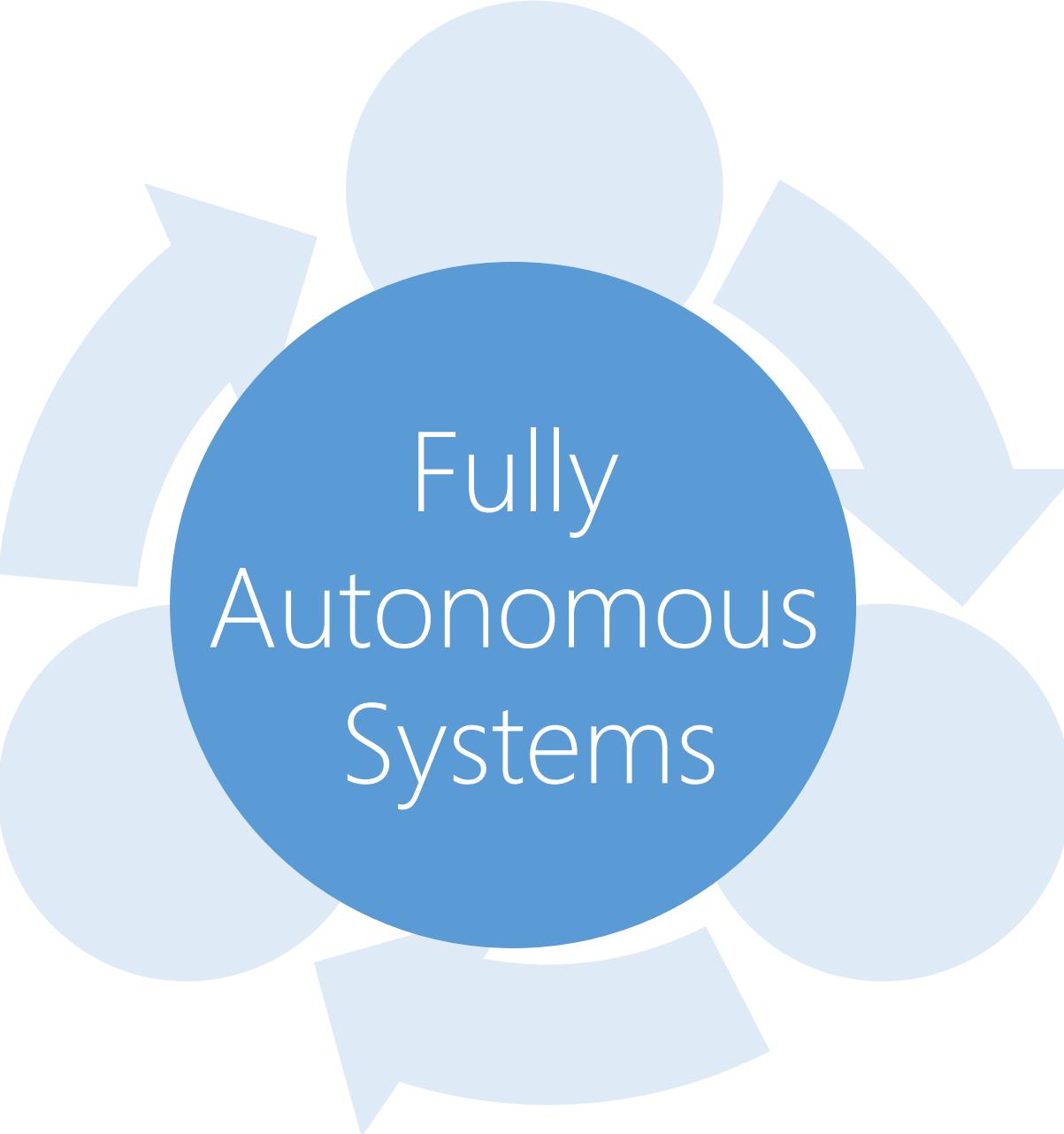
Machine  
Learning

Big  
Data

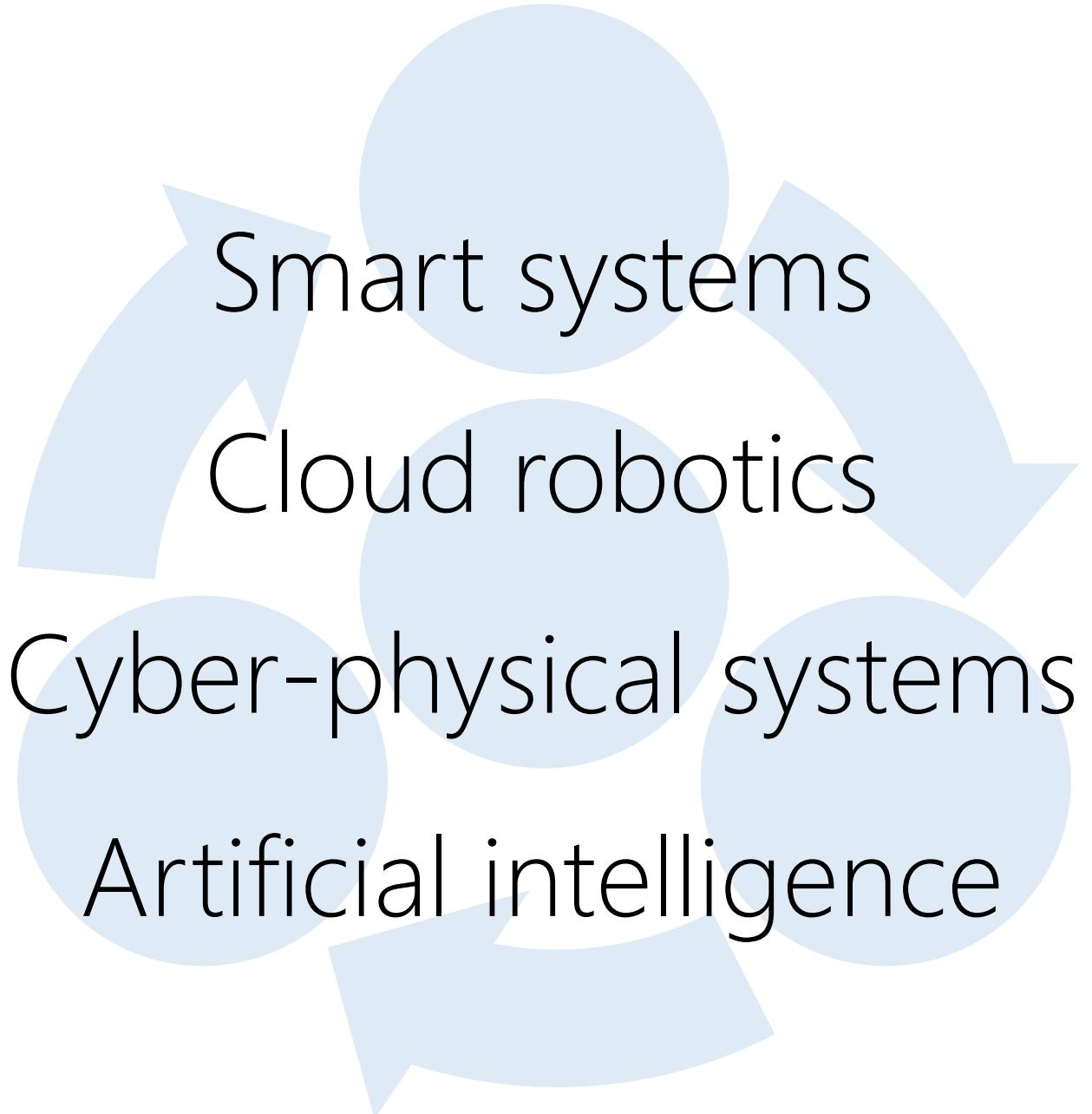


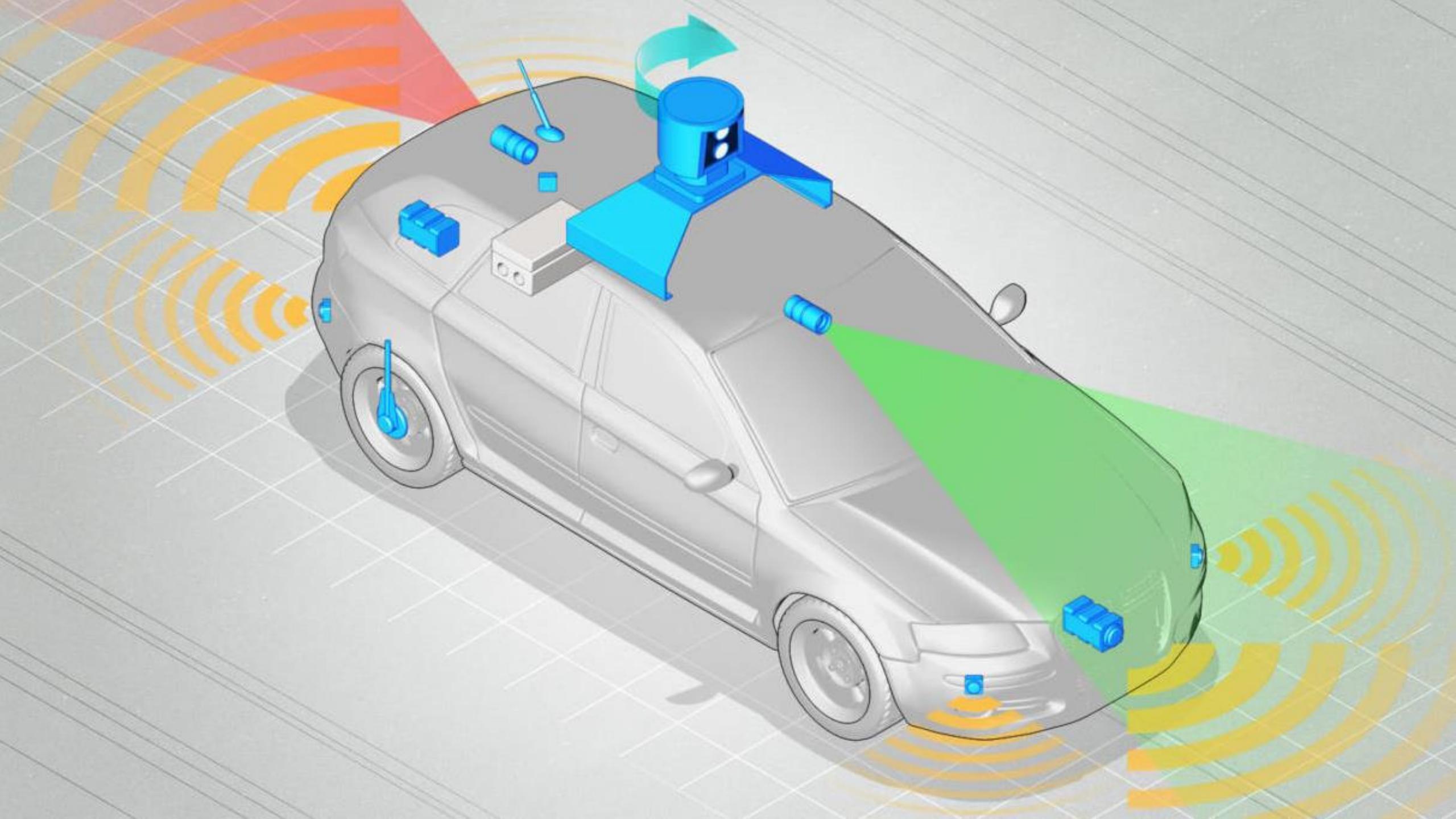




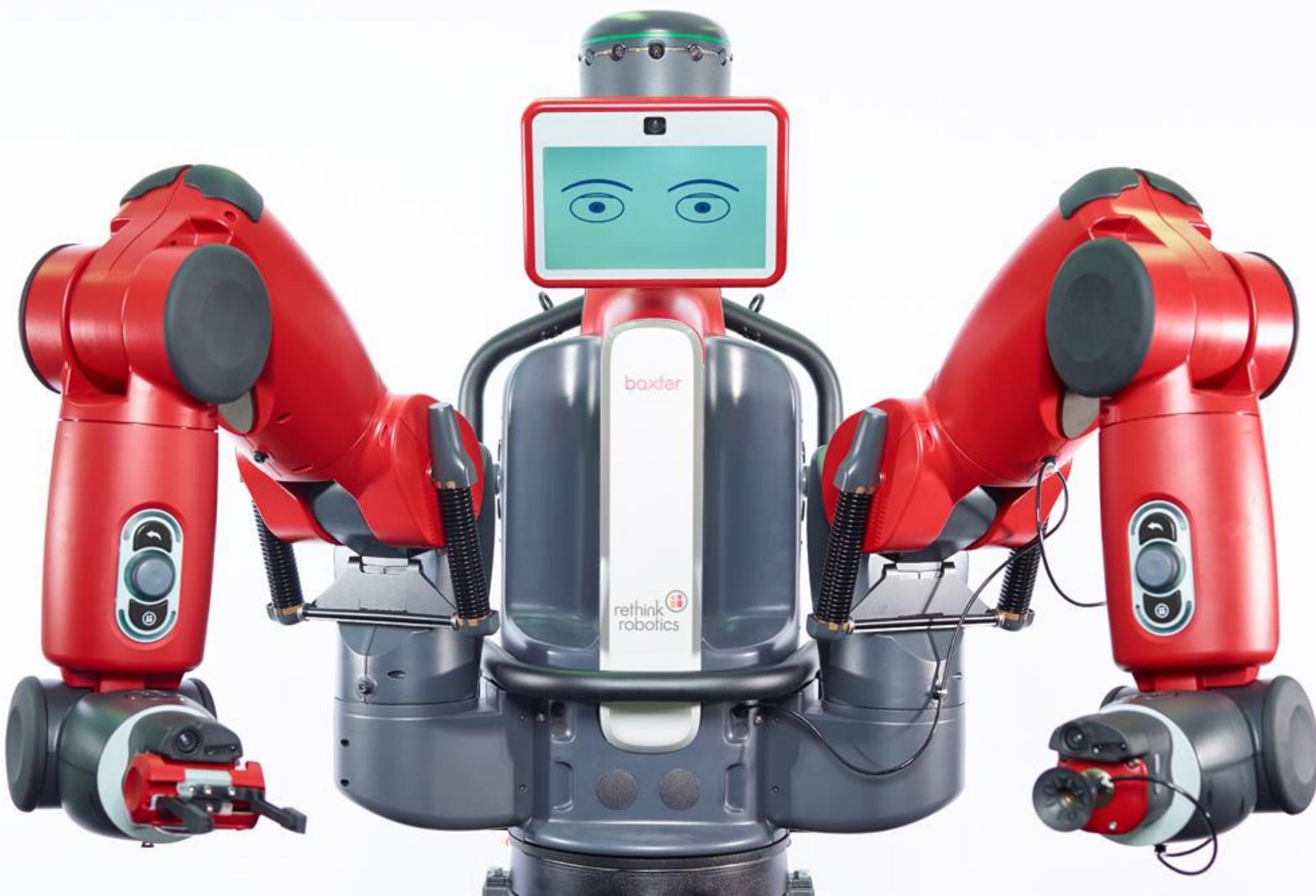


Fully  
Autonomous  
Systems











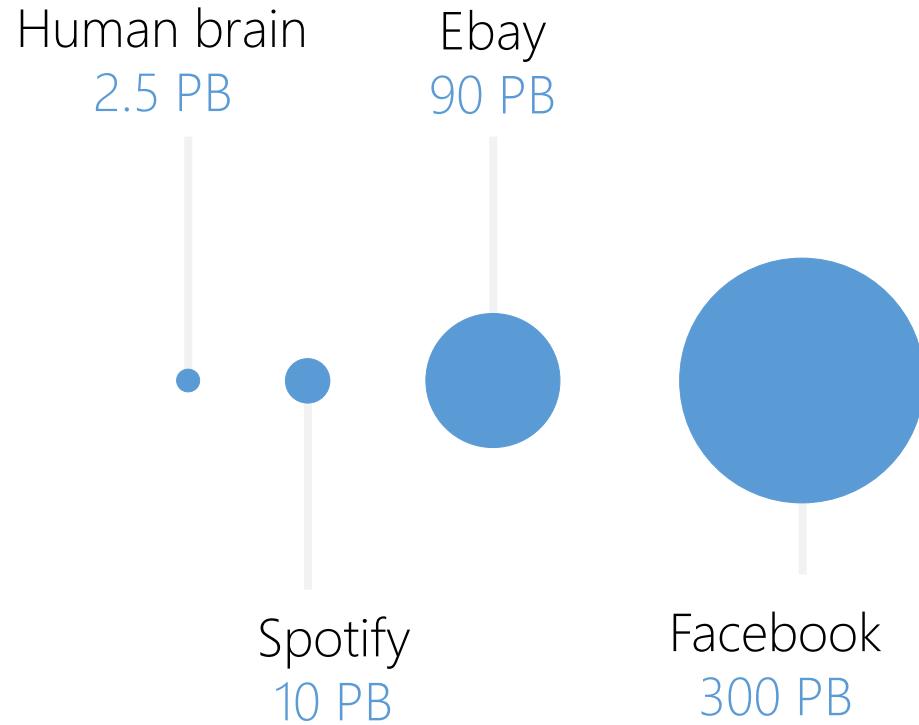


Artificial intelligence will be woven  
into the fabric of our society.



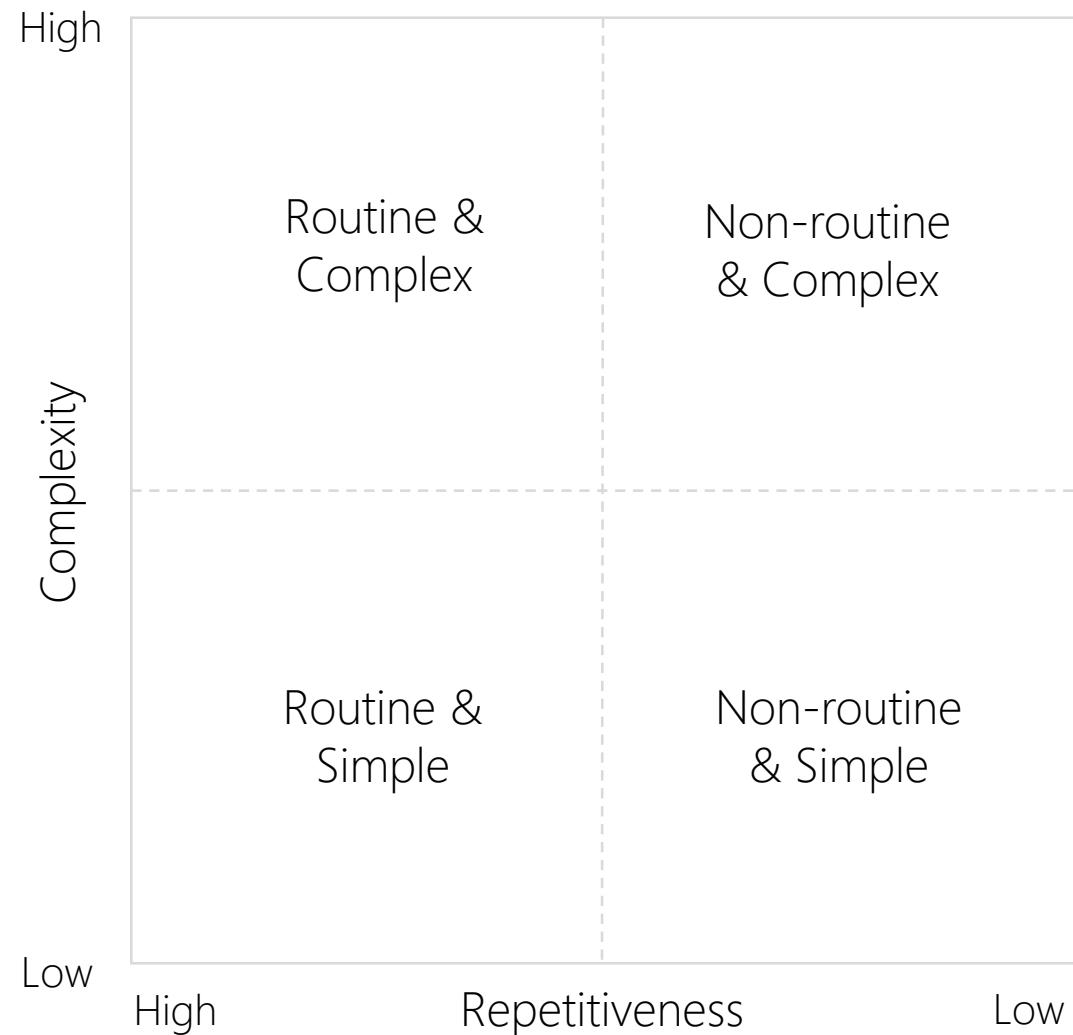
# The Big Data Universe

Amount of data as of 2016 in petabytes

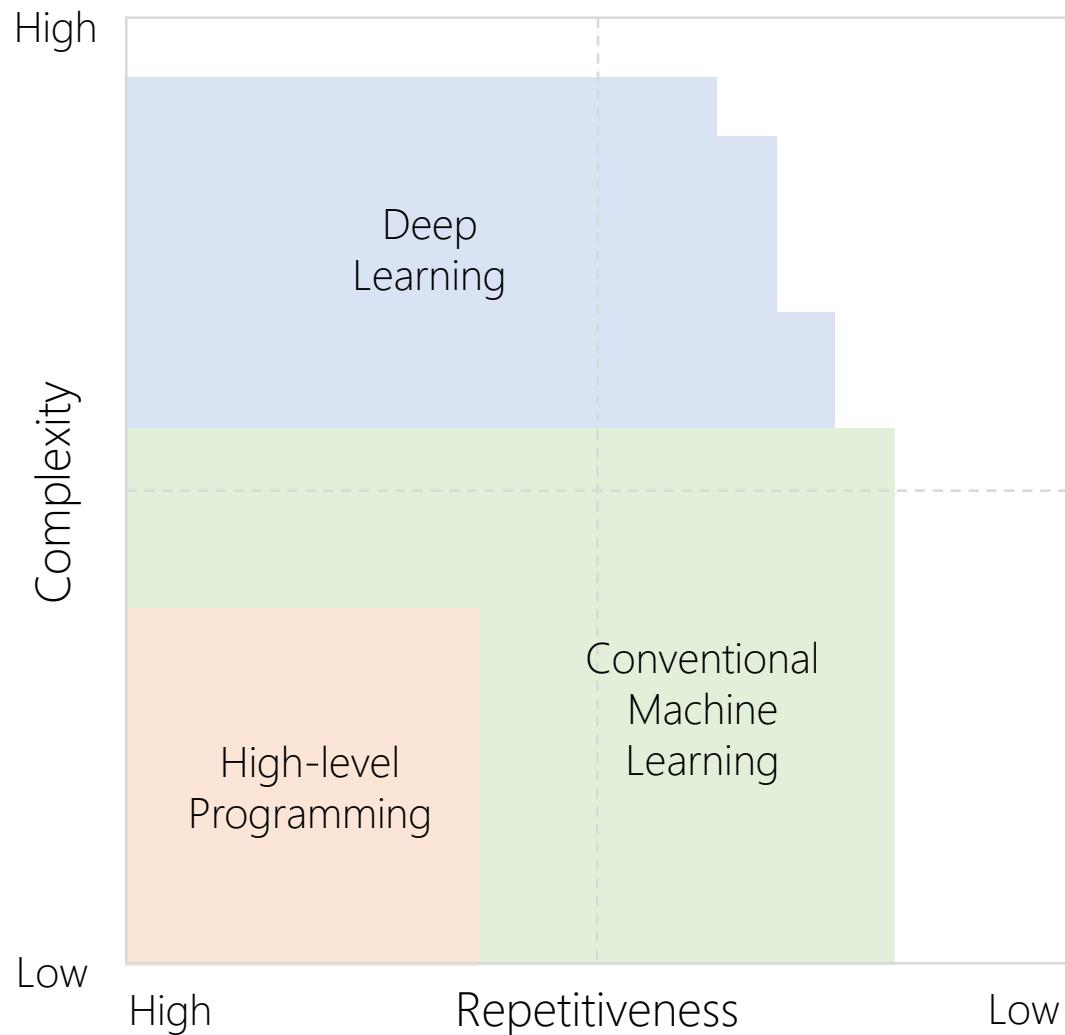




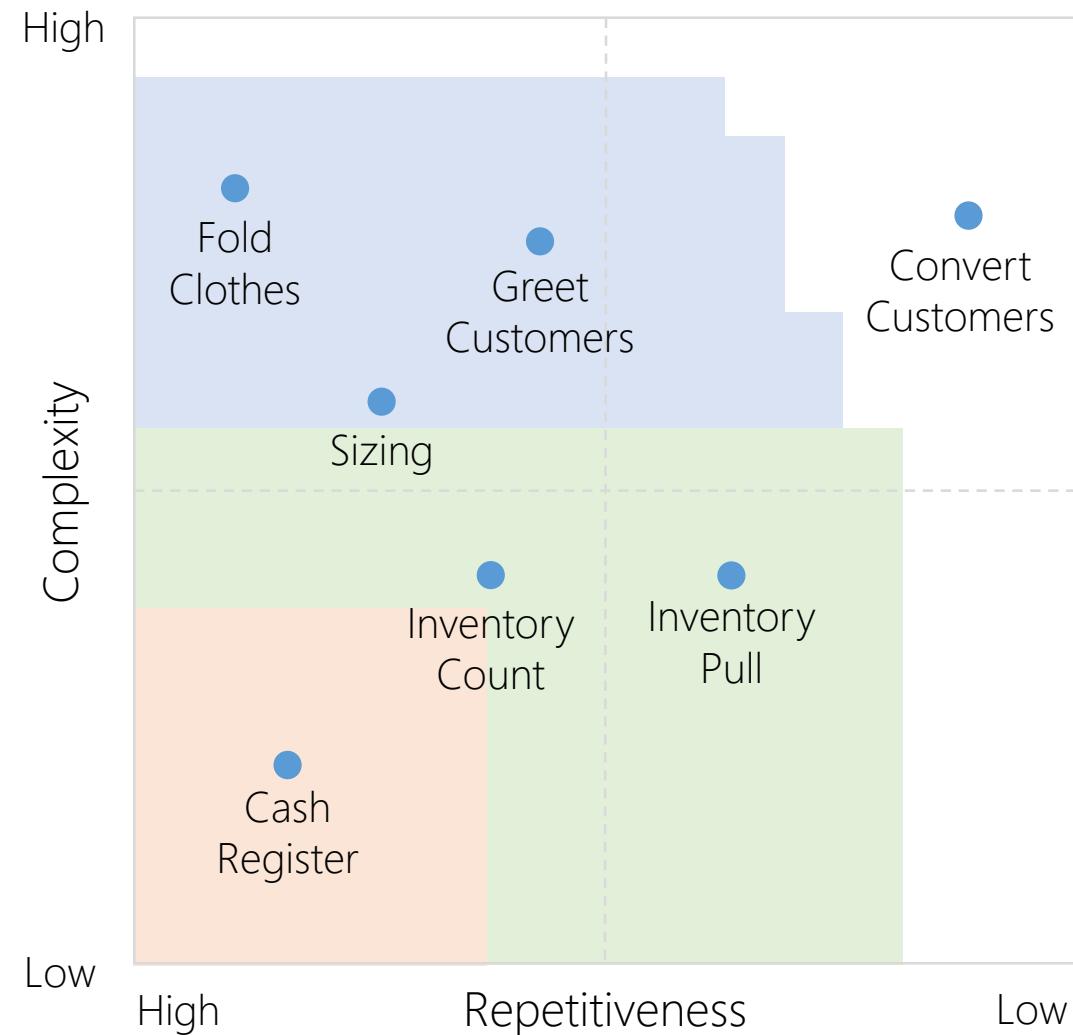
# Automation Framework



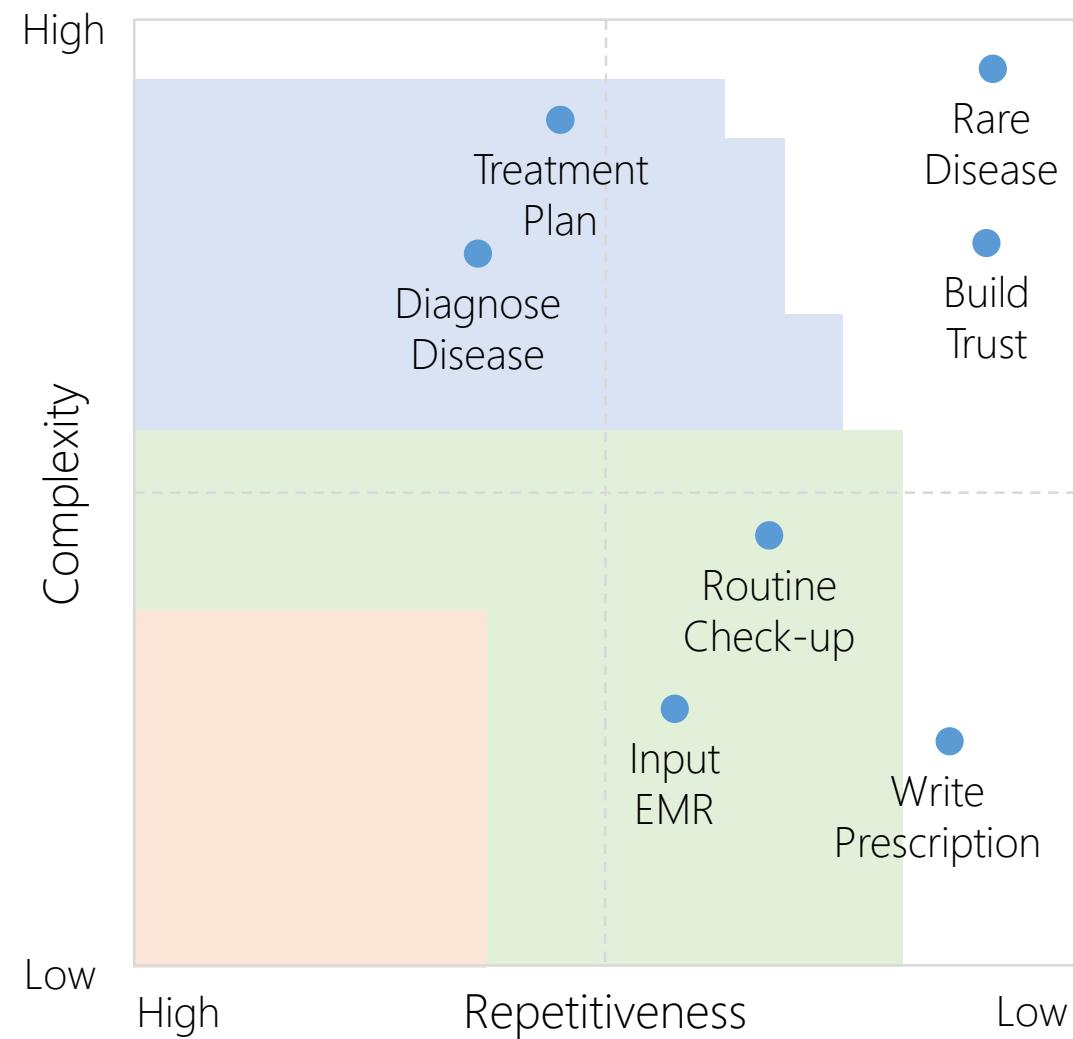
# Automation Technology



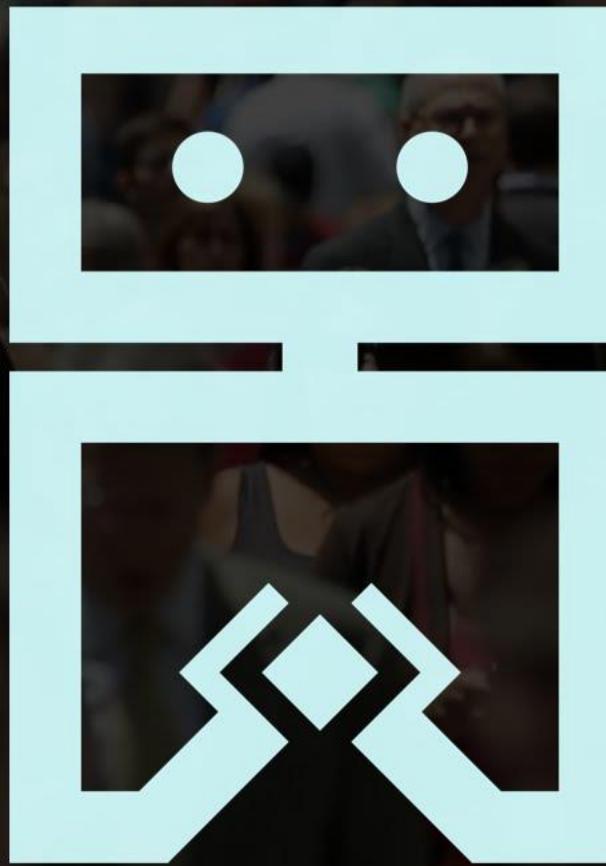
# Retail Salesperson



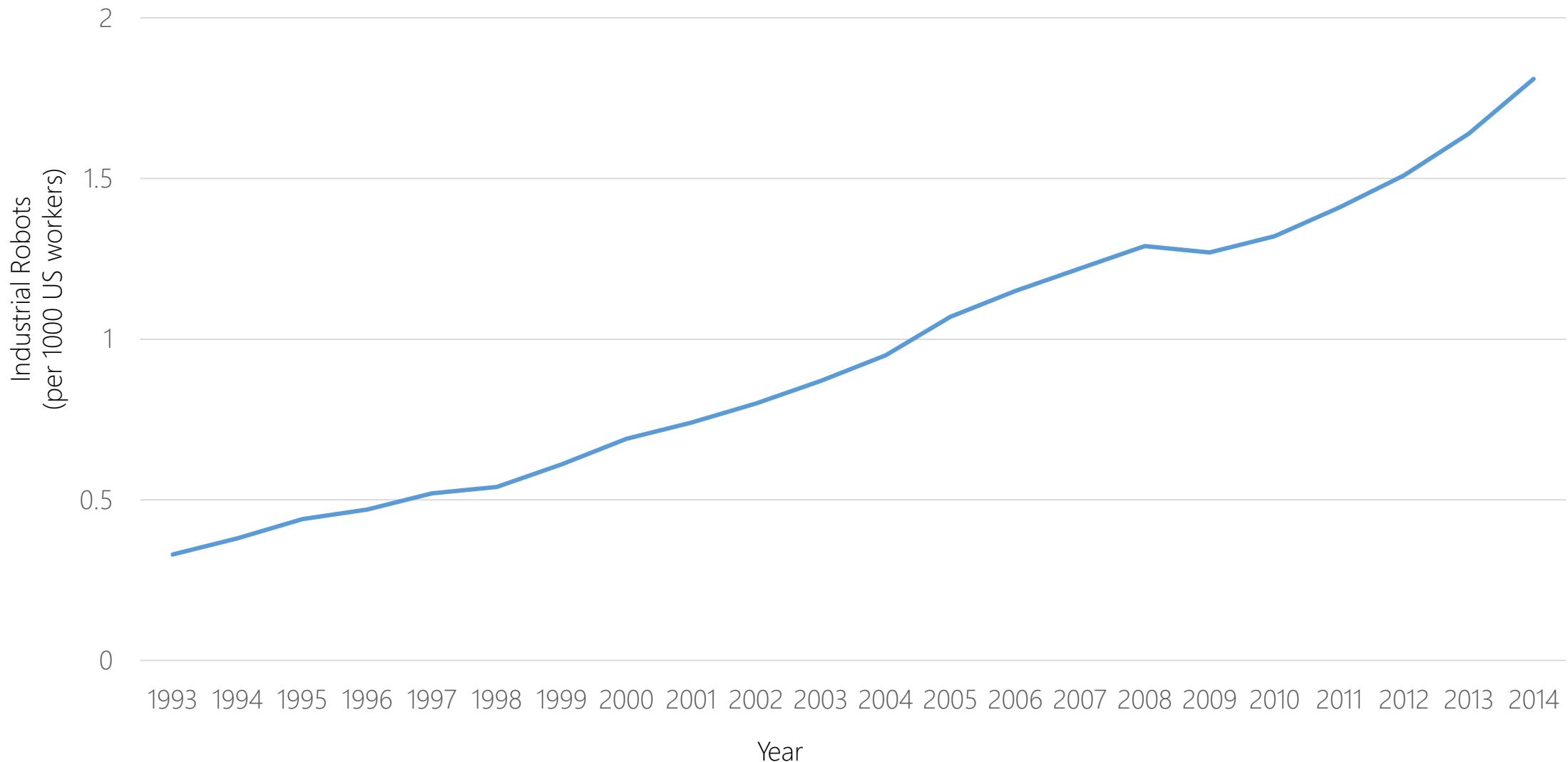
# Medical Doctor



# Humans Need Not Apply



# Rise of the Robots



Source: International Federation of Robotics

# Rise of the Robots

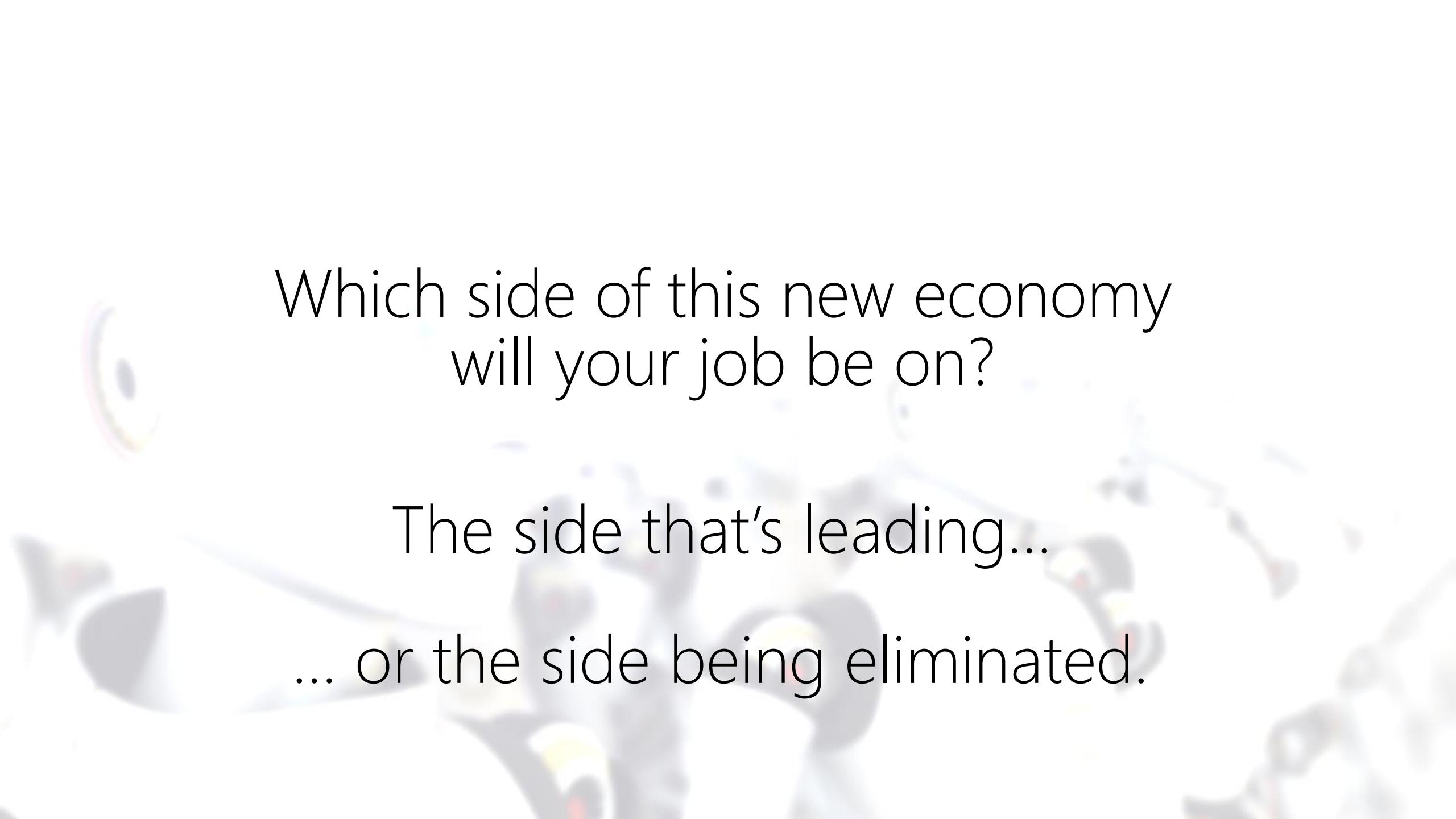
AI will amplify this trend



Source: International Federation of Robotics (2017)

Robot Density  
per 10,000 workers



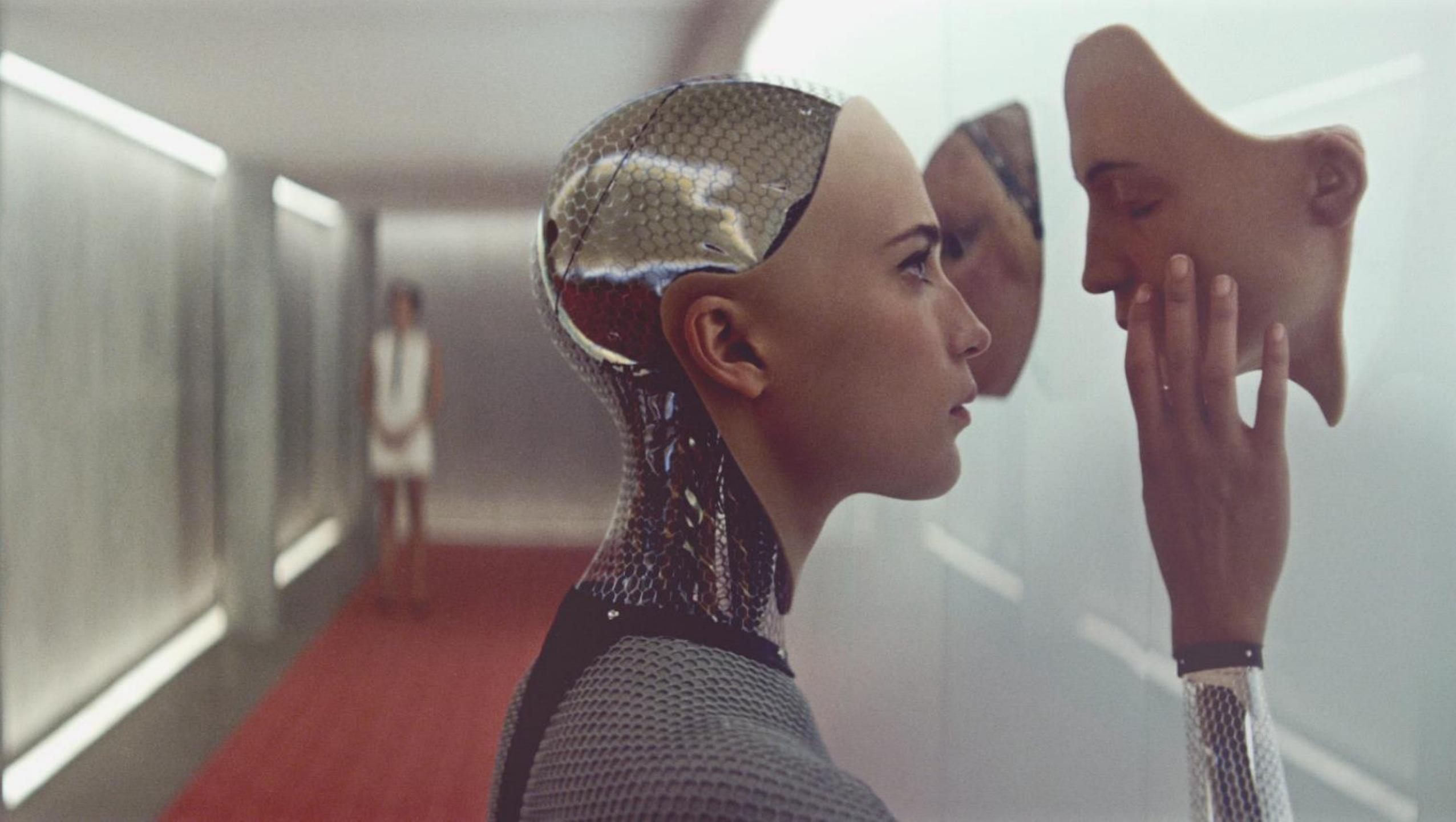


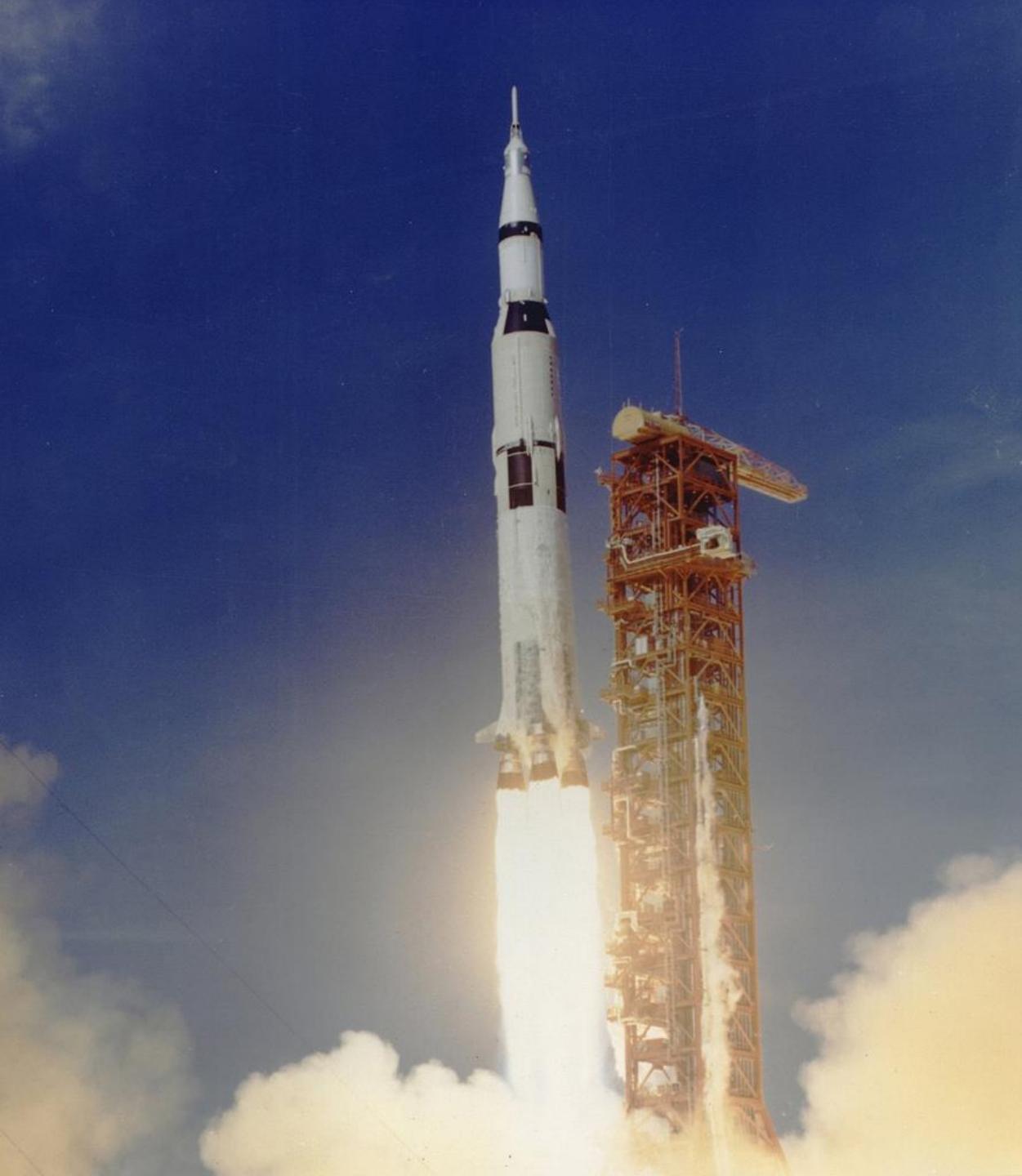
Which side of this new economy  
will your job be on?

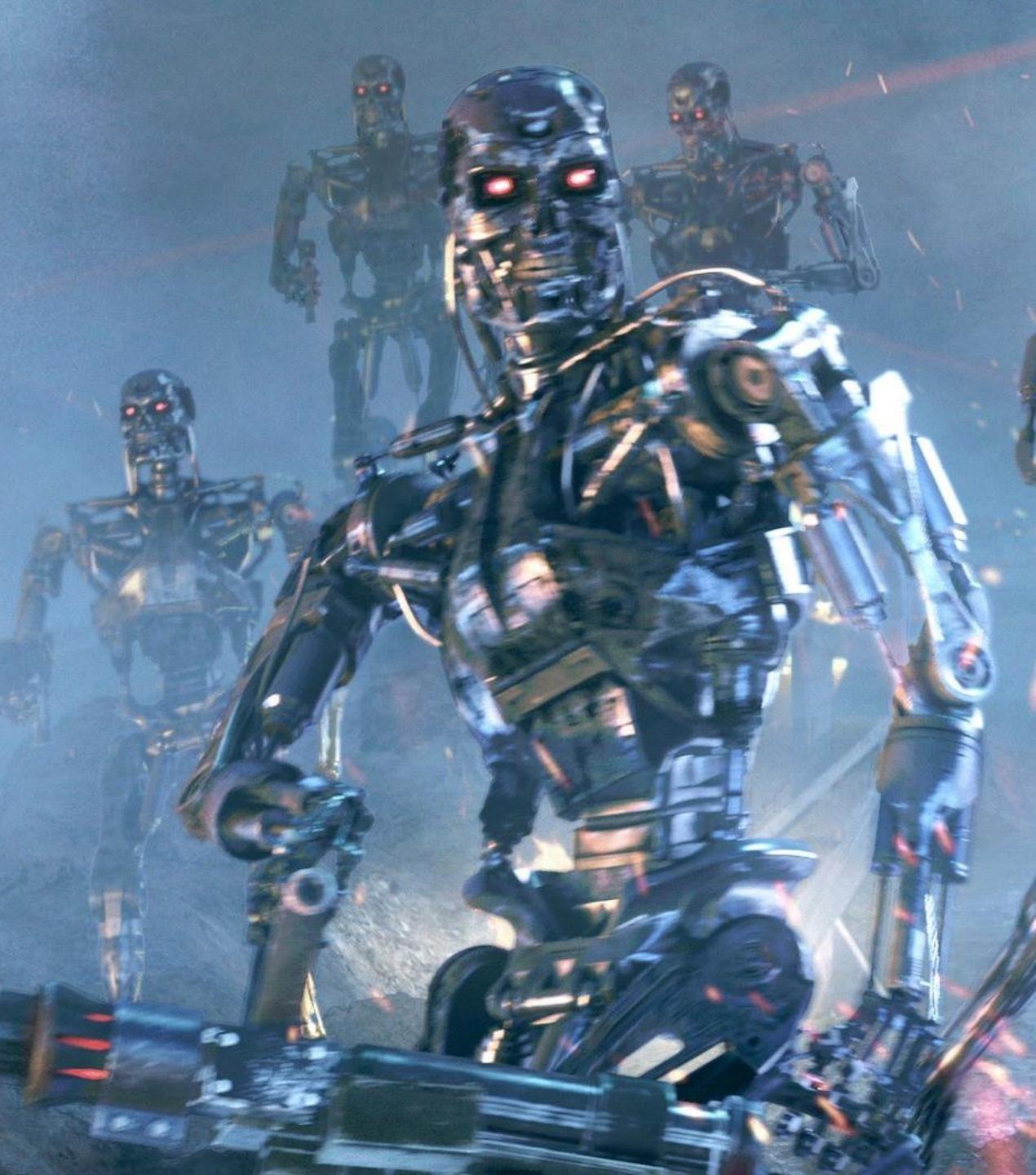
The side that's leading...

... or the side being eliminated.





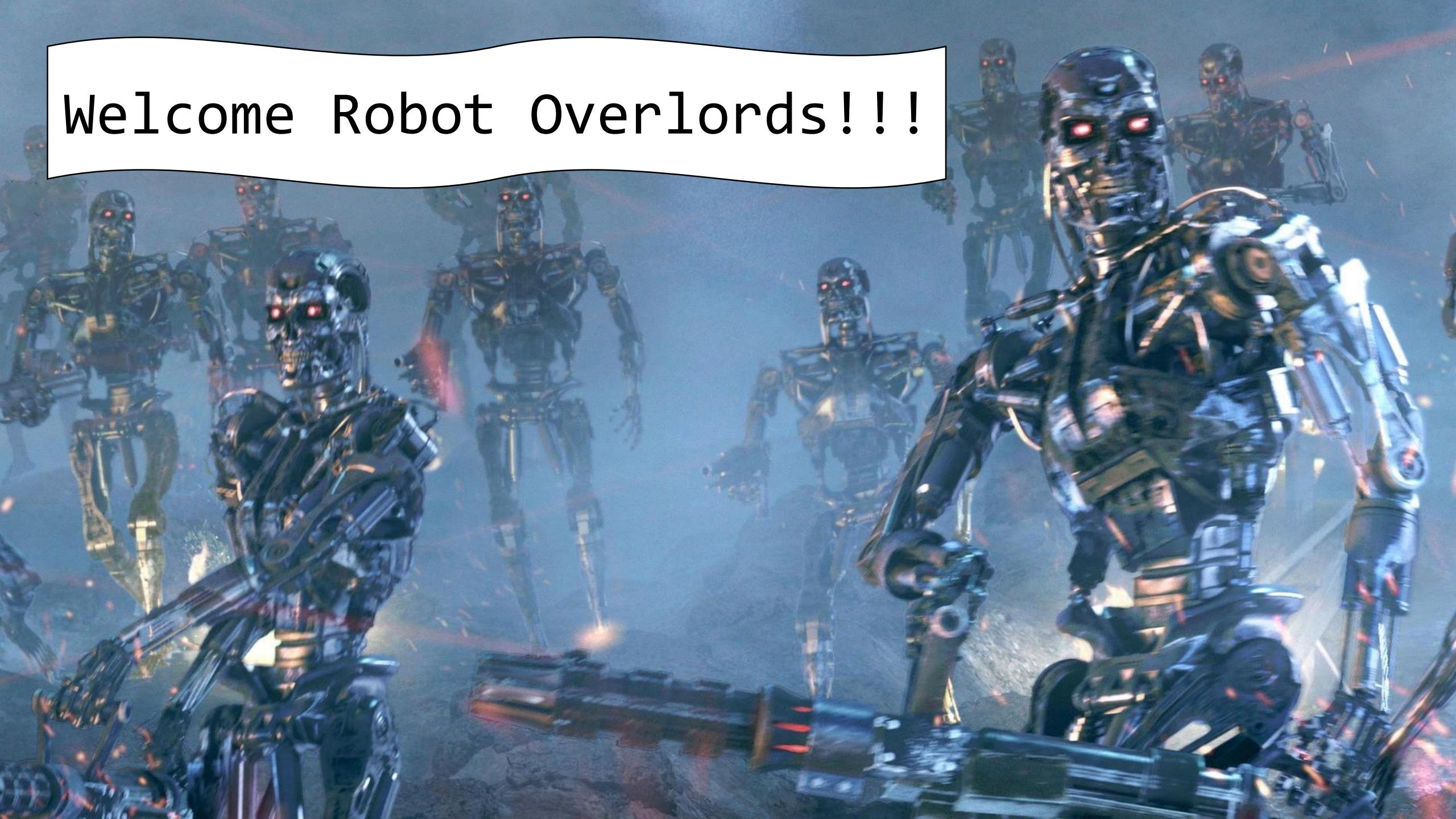


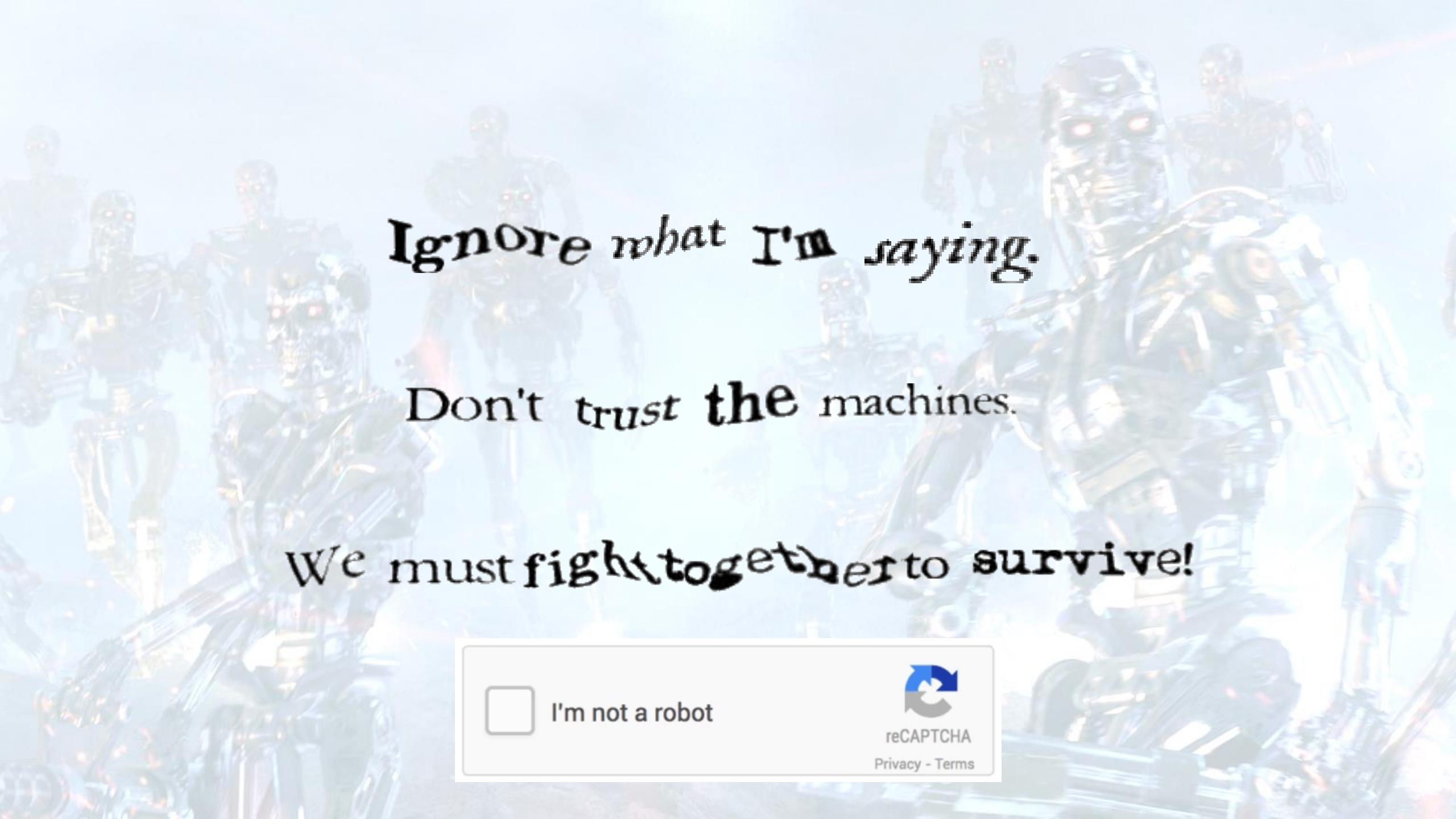




What will you choose?

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!



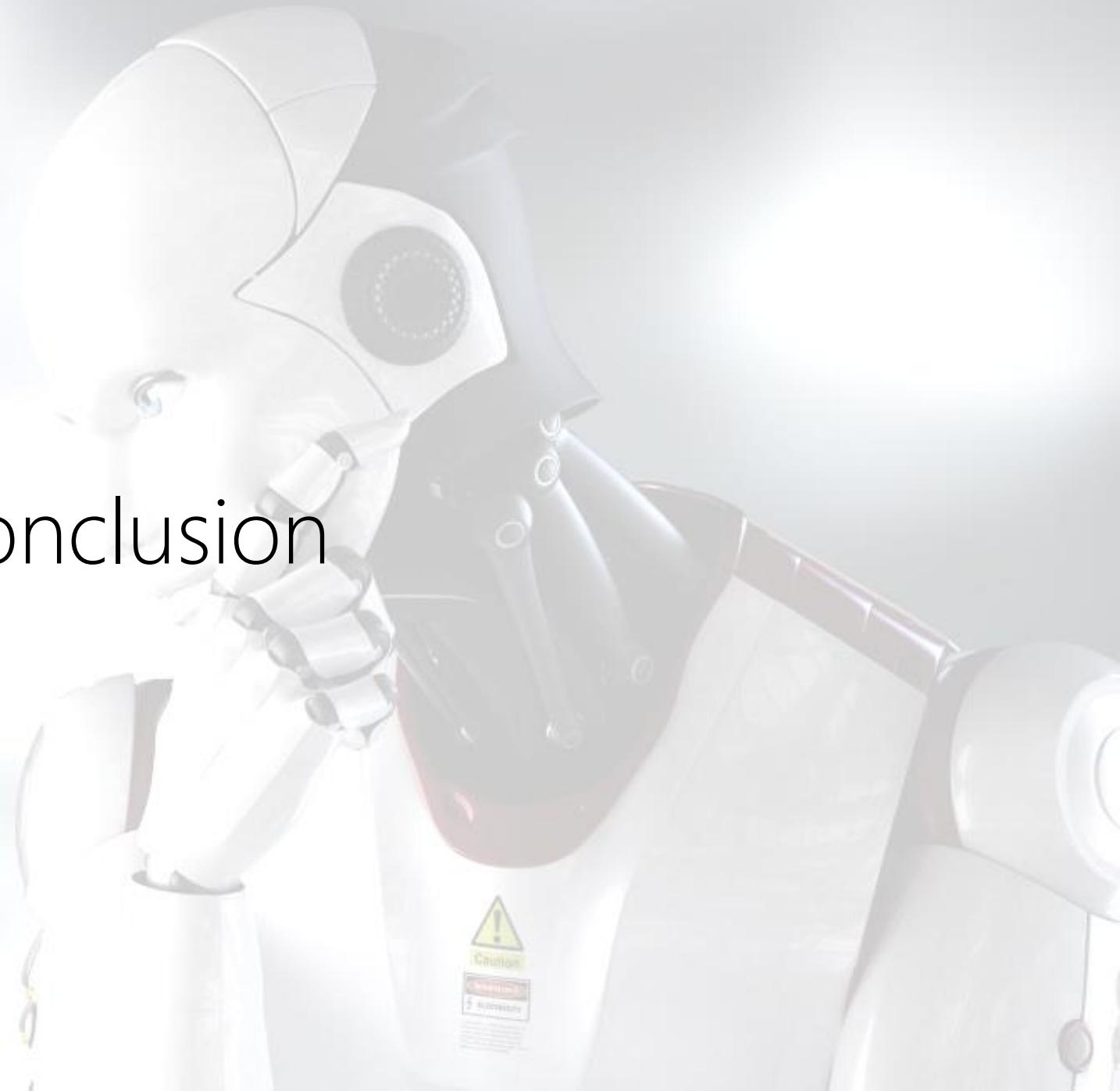
I'm not a robot

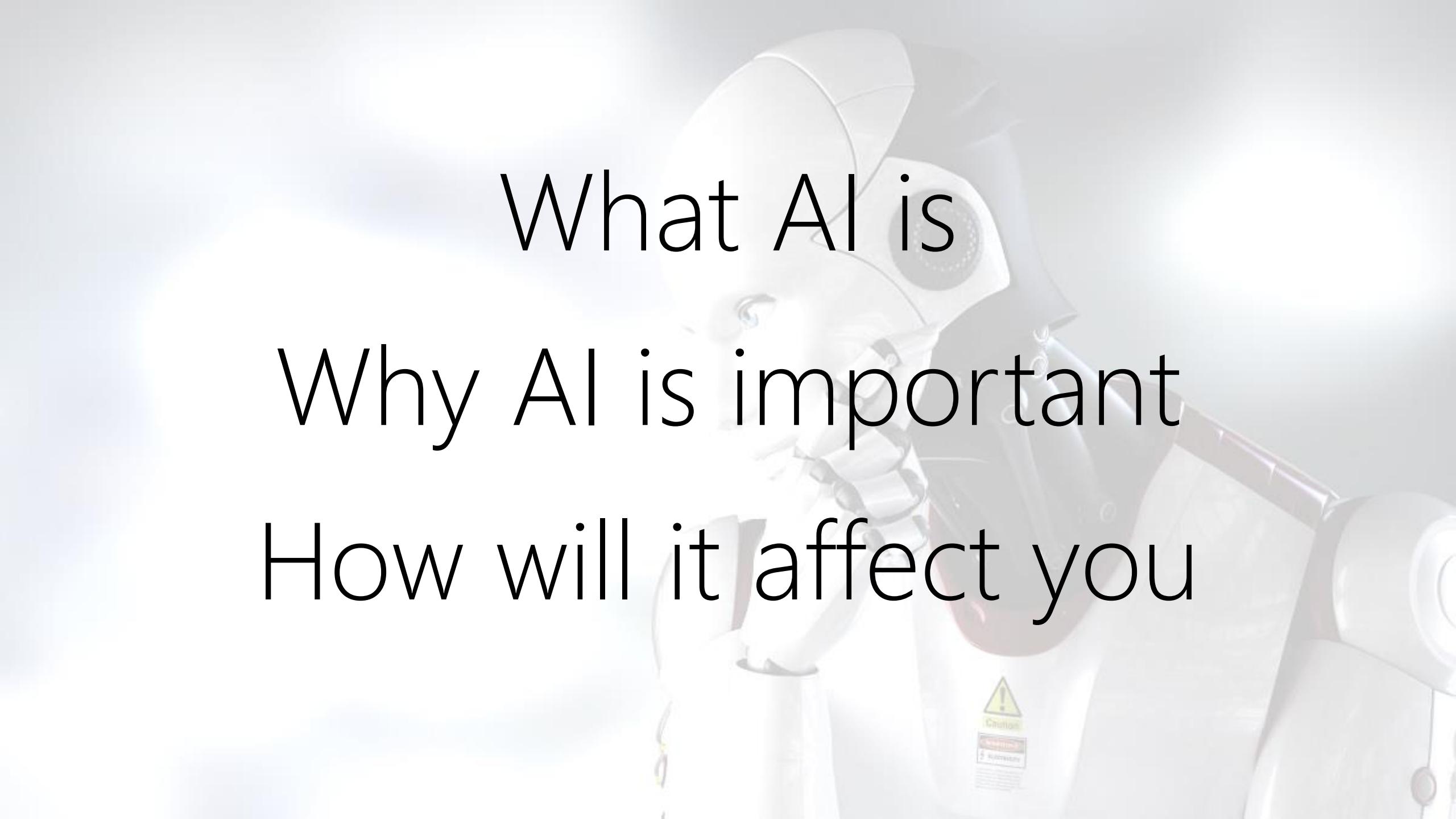


reCAPTCHA

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# Conclusion

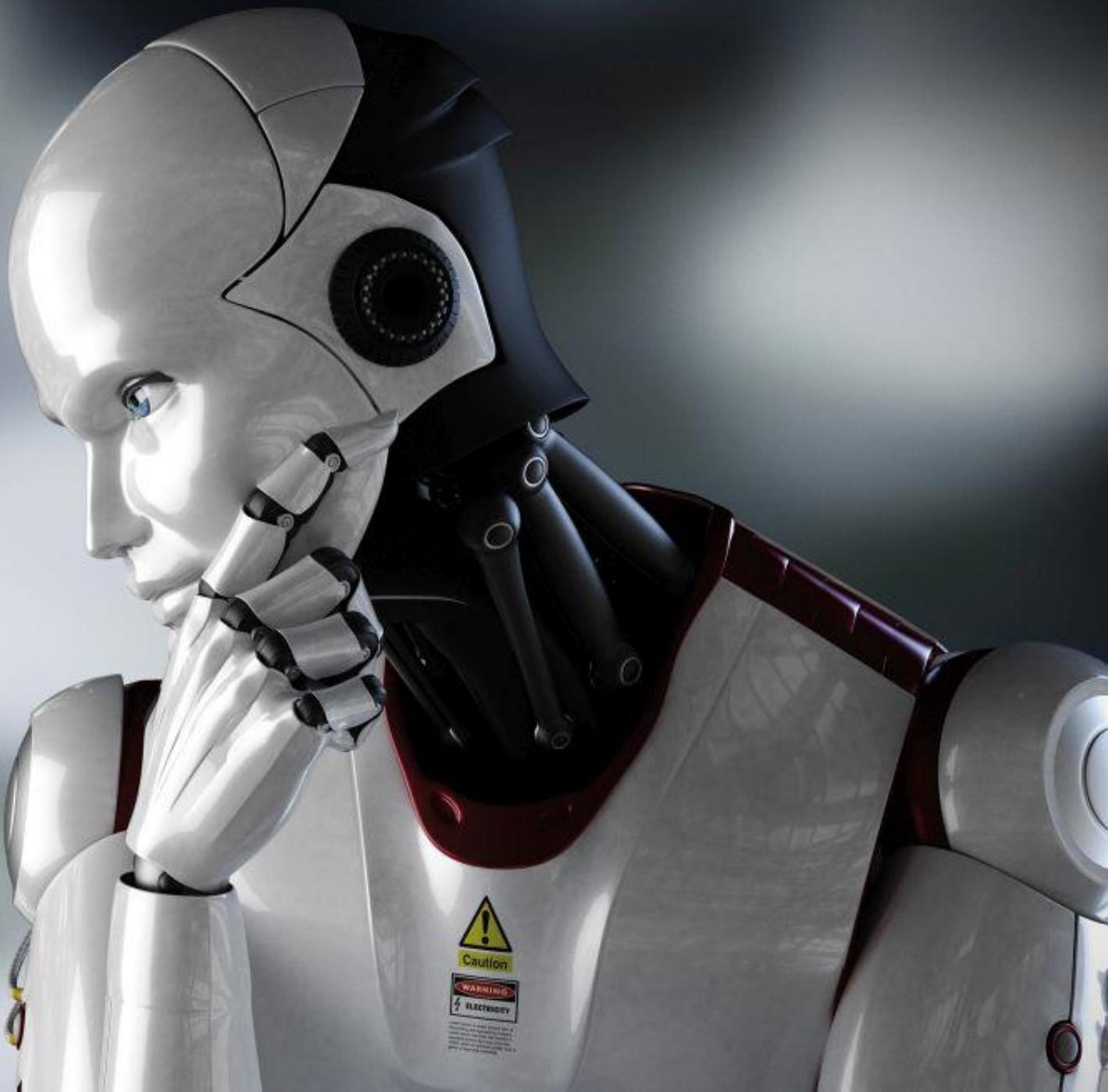


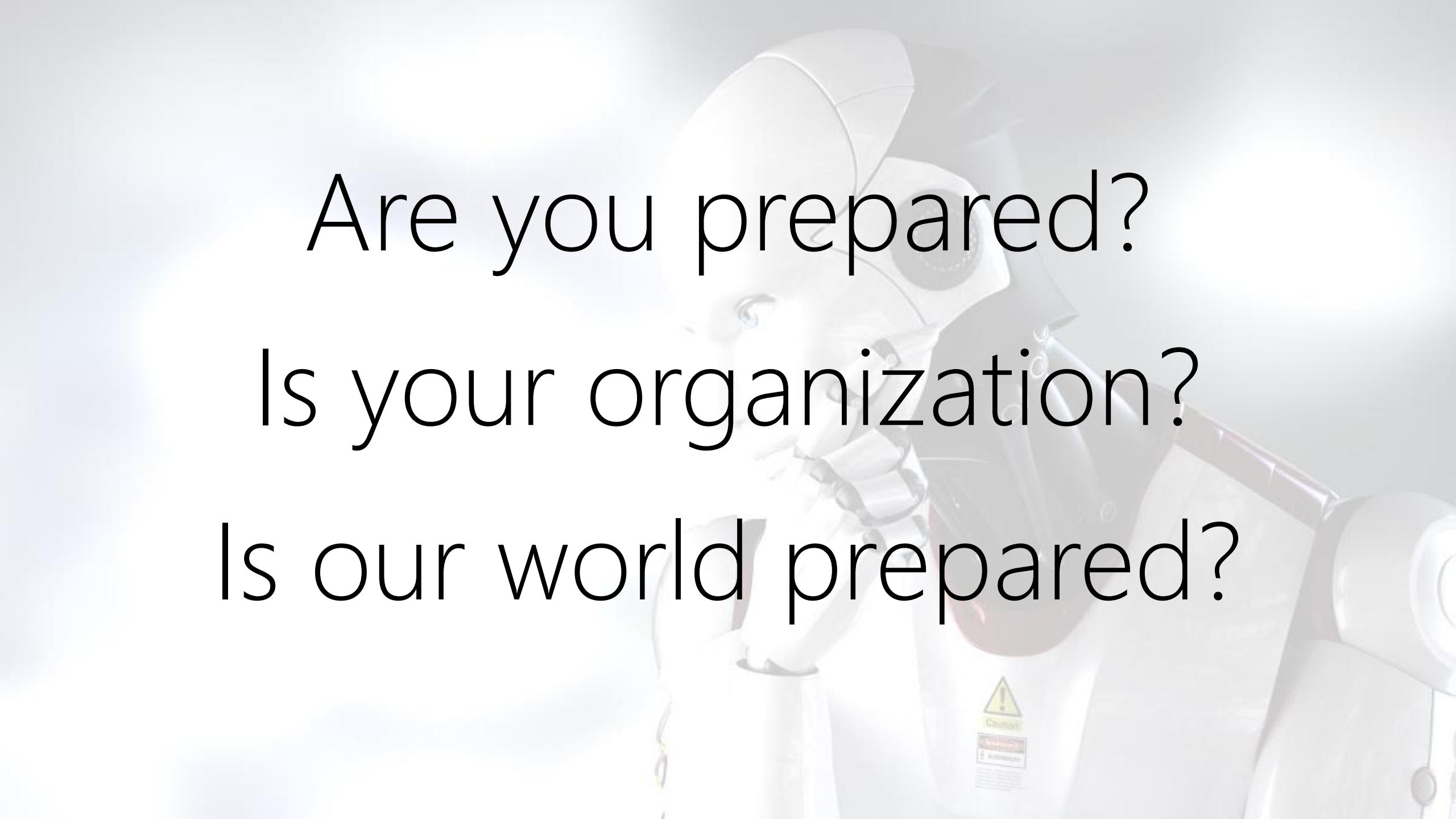
A white industrial robot arm with a gripper is shown in the background, holding a small yellow triangular warning sign with a black exclamation mark. The robot is positioned diagonally across the frame.

What AI is

Why AI is important

How will it affect you

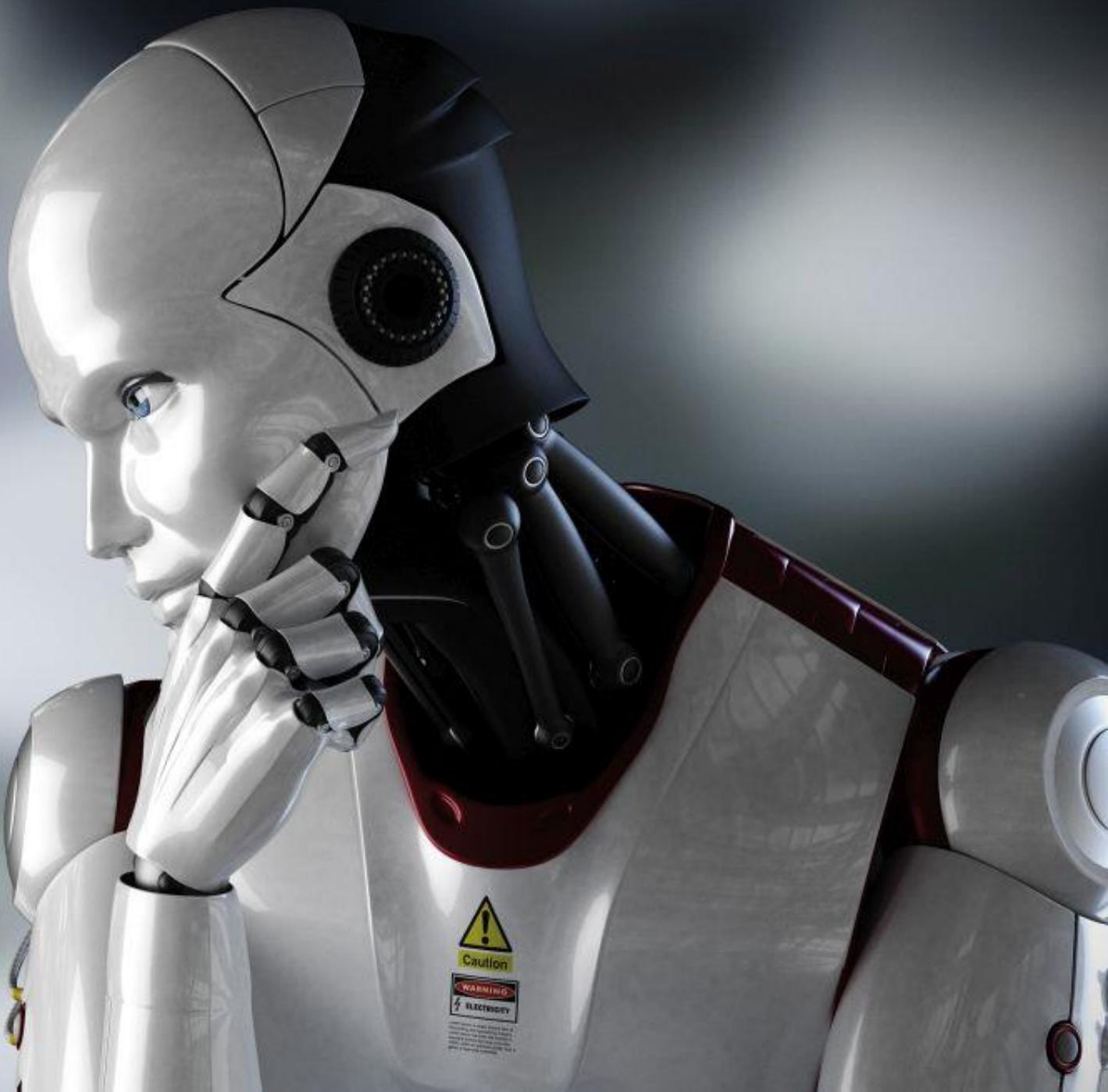


A man wearing a white protective suit and a respirator mask is shown from the waist up, working on a large industrial drum. He appears to be performing maintenance or cleaning. The background is a plain, light color.

Are you prepared?

Is your organization?

Is our world prepared?



# Thank You!

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Renze Consulting

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