

Artificial Intelligence

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Open Day 12:30 – 13:00

Artificial Intelligence (AI)

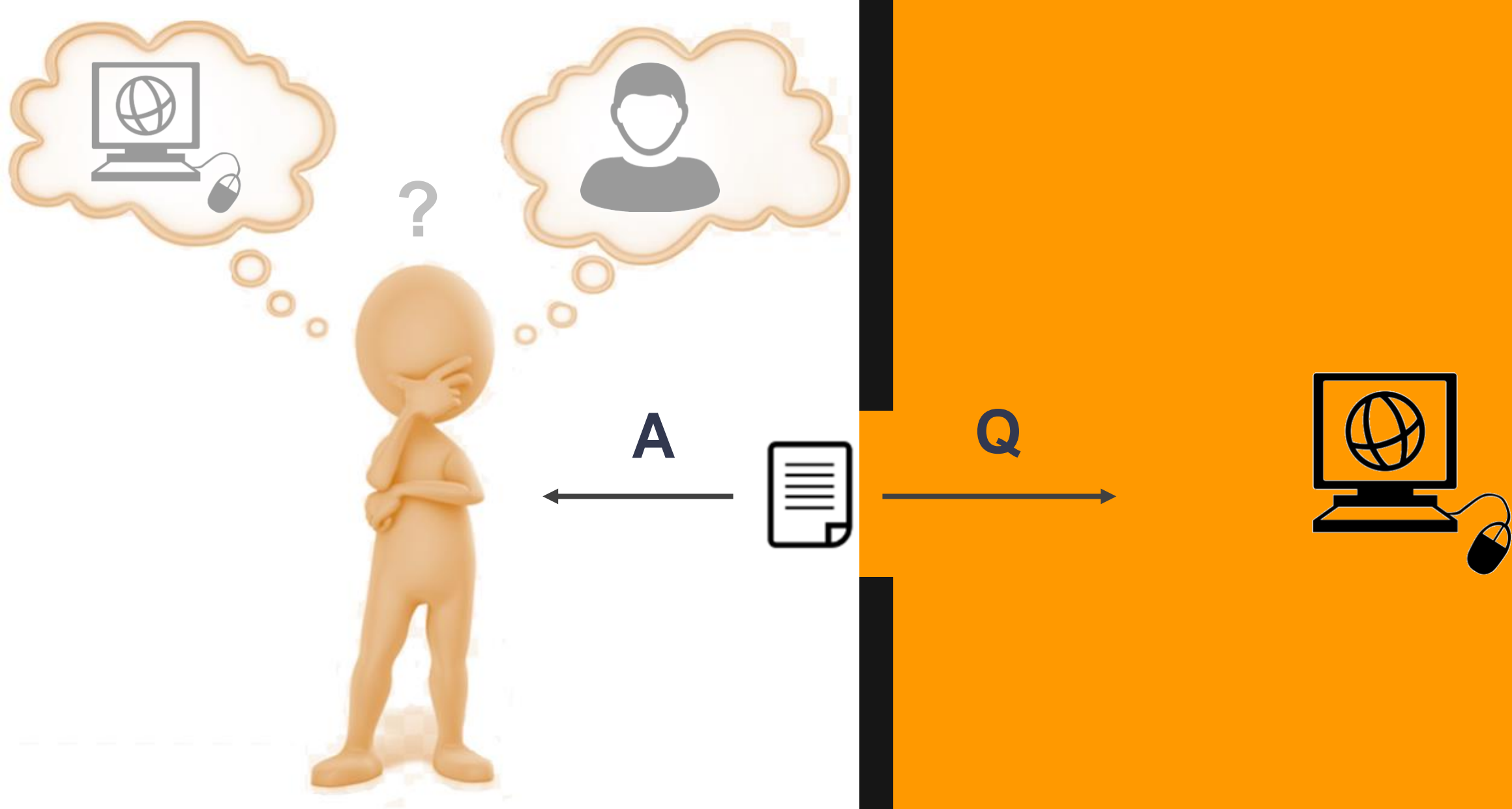
to create intelligent machines that
think (reasoning) and **act** (work) like
human beings

Alan Turing

23 June 1912 – 7 June 1954

Father of **Computer Science** and
Artificial Intelligence





The Turing test

Dr Varun Ojha, University of Reading

Artificial intelligence timeline

Turing Test
by Allen Turing
Manchester, UK

1950

Eliza, a Chatbot
Text conversation with a human
by MIT AI Lab,
Massachusetts, USA

1964

Artificial Intelligence
term defined
by John McCarthy
Stanford, USA

1955

ALVINN
Autonomous Vehicles
by CMU
Pittsburgh, USA

1989

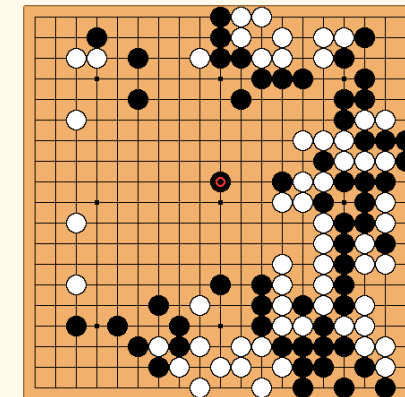
Deep Blue
beats
world champion
Garry Kasparov
in Chess match
IBM,
New York, USA

1997

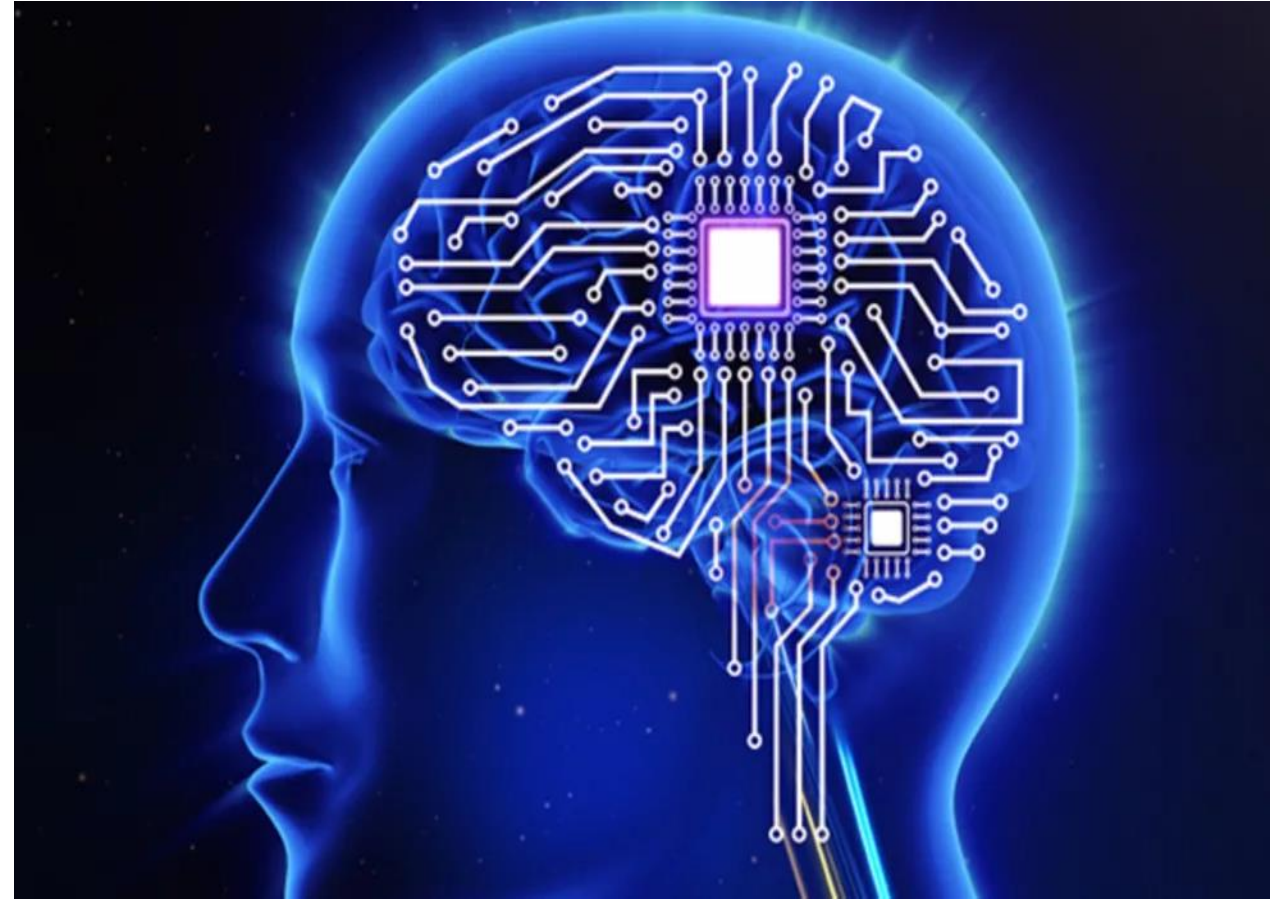


AlphaGo,
beats 18 times
world champion
Lee Sedol
in Go game
Google,
DeepMind

2016

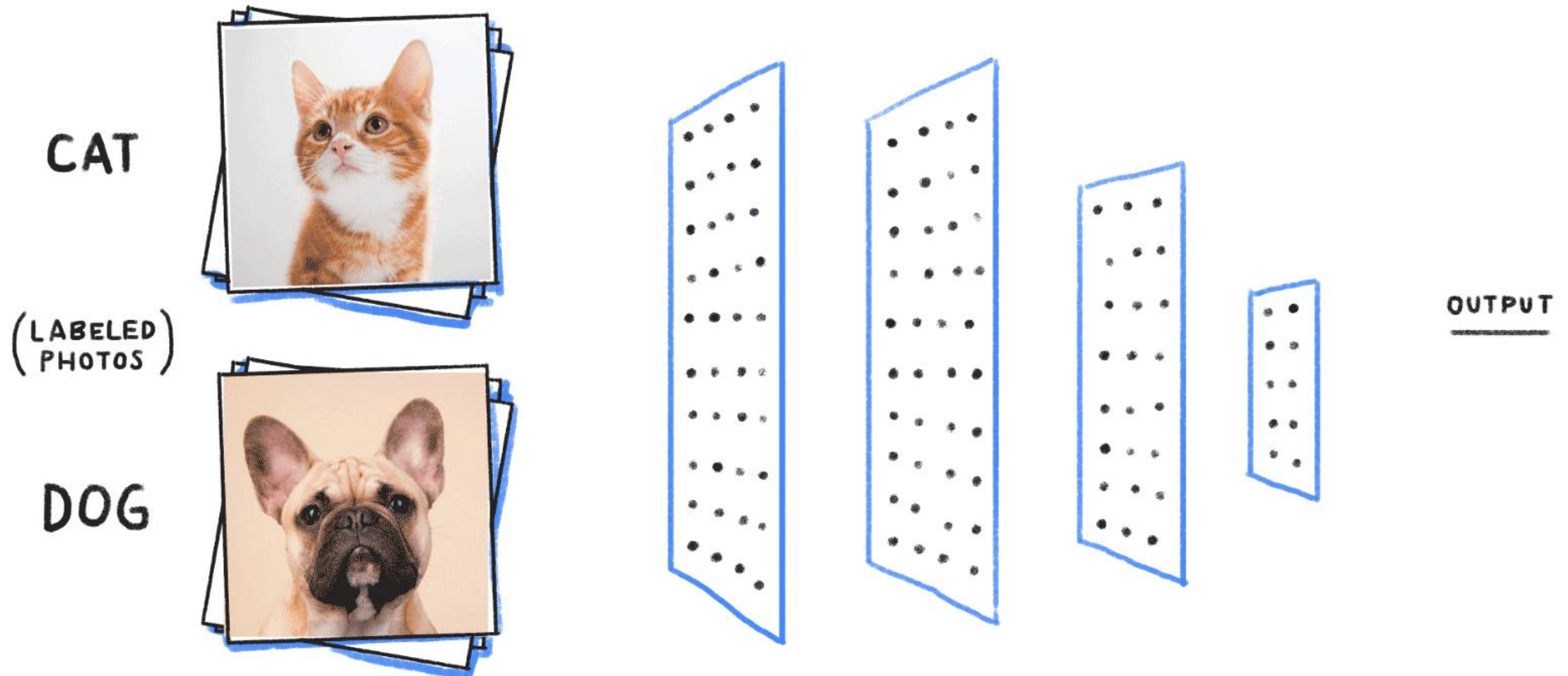


Machine Learning



CAT OR DOG?

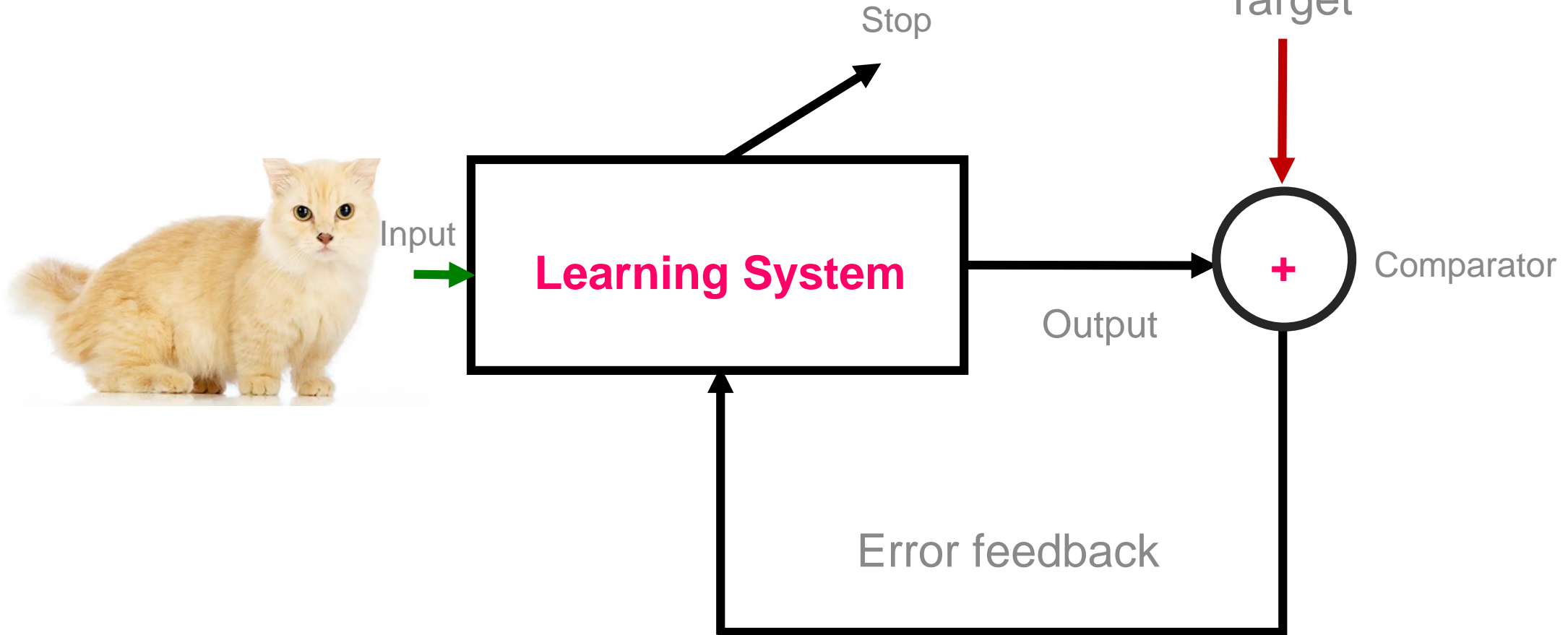
Source: <https://becominghuman.ai/building-an-image-classifier-using-deep-learning-in-python-totally-from-a-beginners-perspective-be8dbaf22dd8>



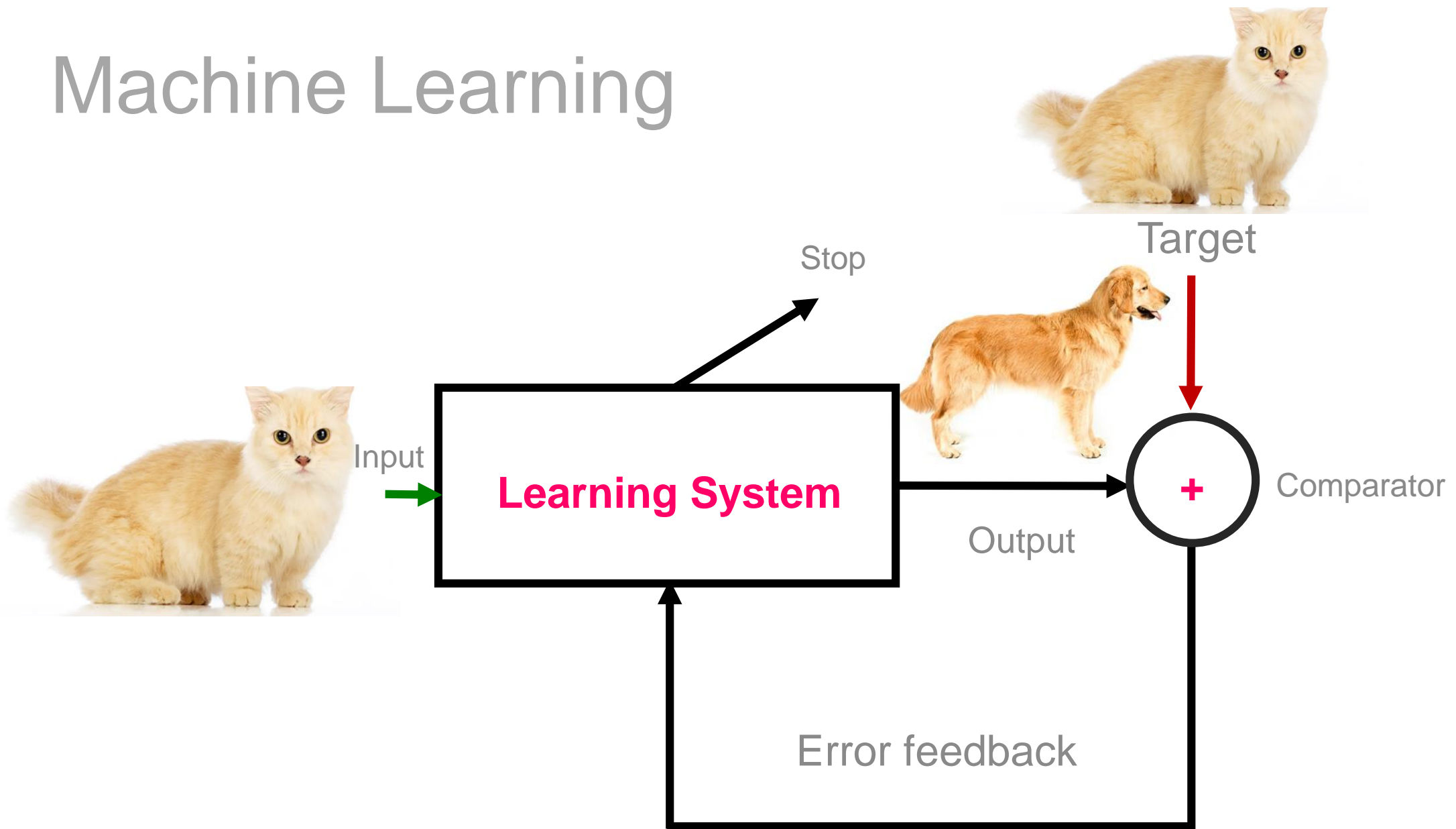
Machine Learning



Target



Machine Learning



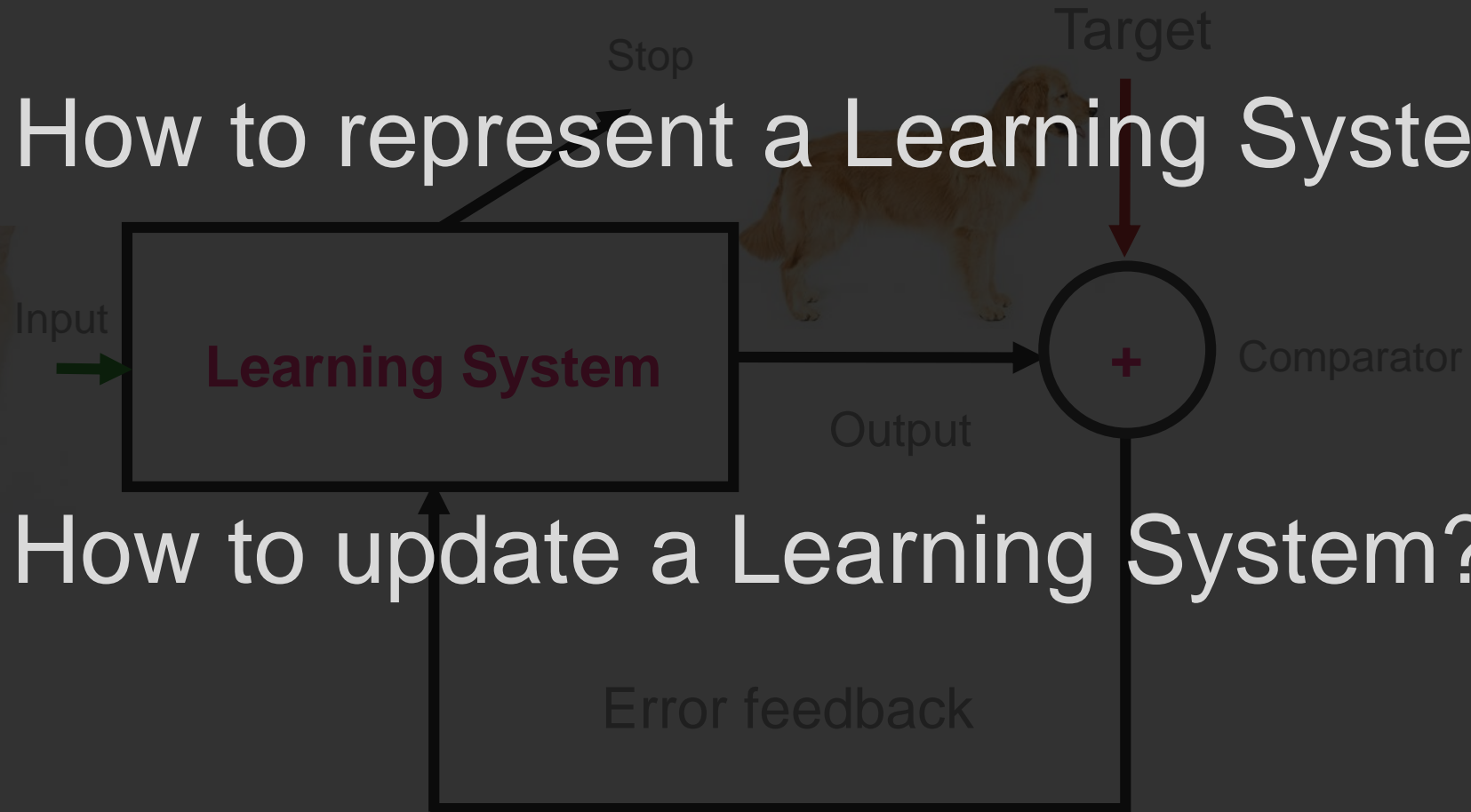
Machine Learning

1

How to represent a Learning System?

2

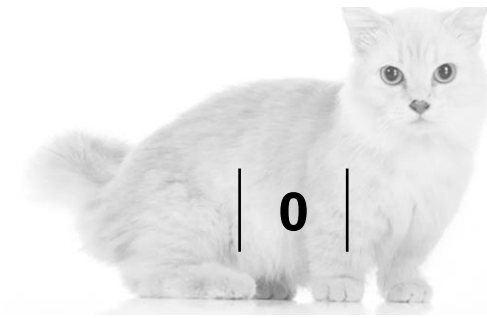
How to update a Learning System?



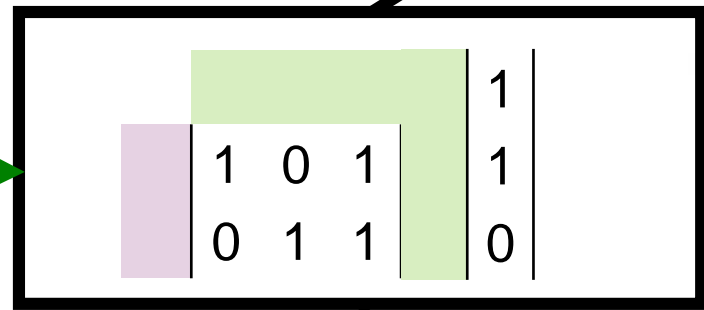
1

Machine Learning

Representation of a Learning system



Input

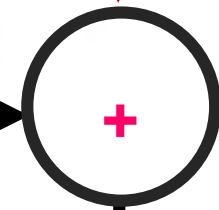


Stop



Output

Target



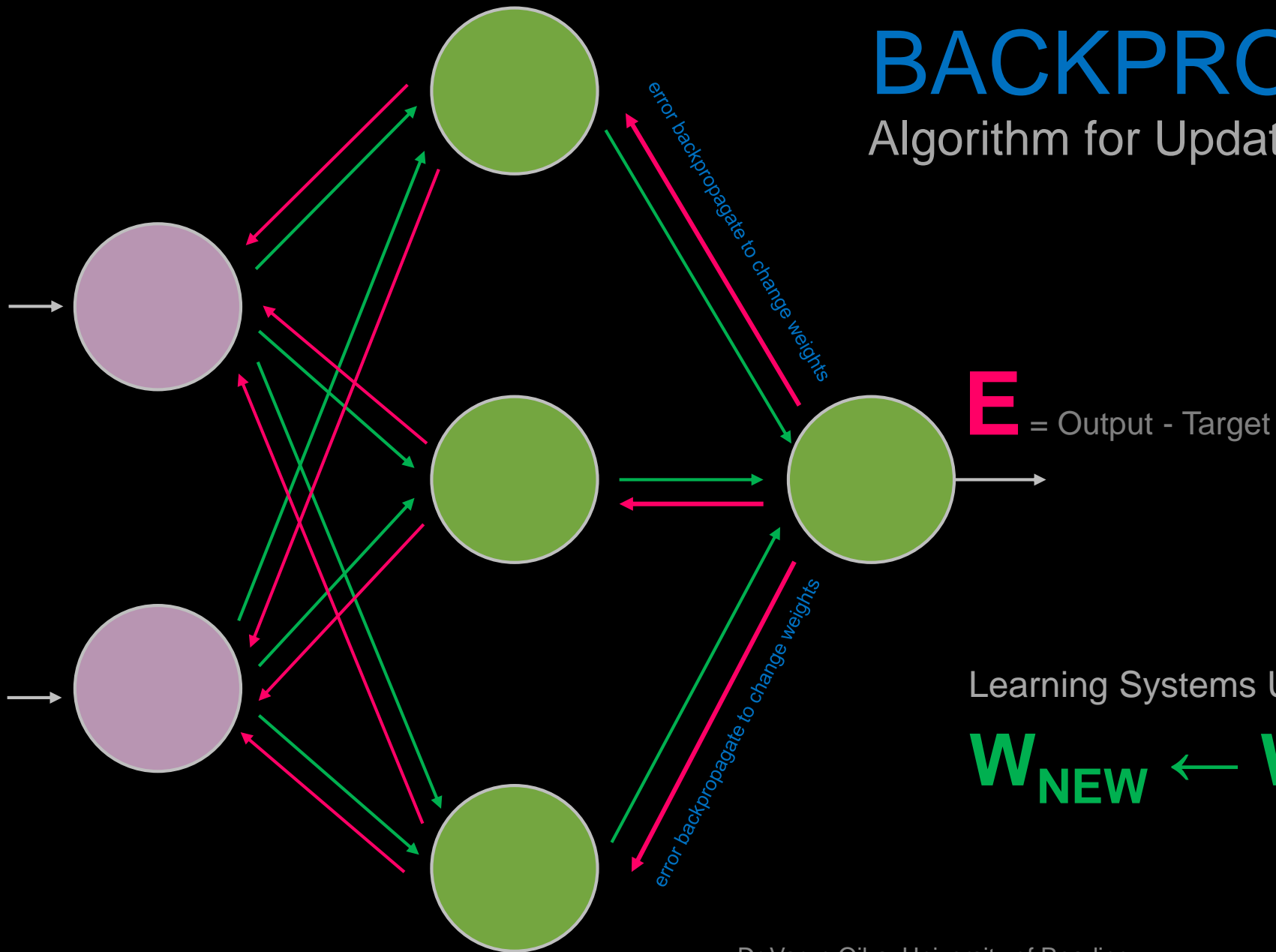
Comparator

Error feedback

BACKPROPAGATION

2

Algorithm for Updating Learning Systems

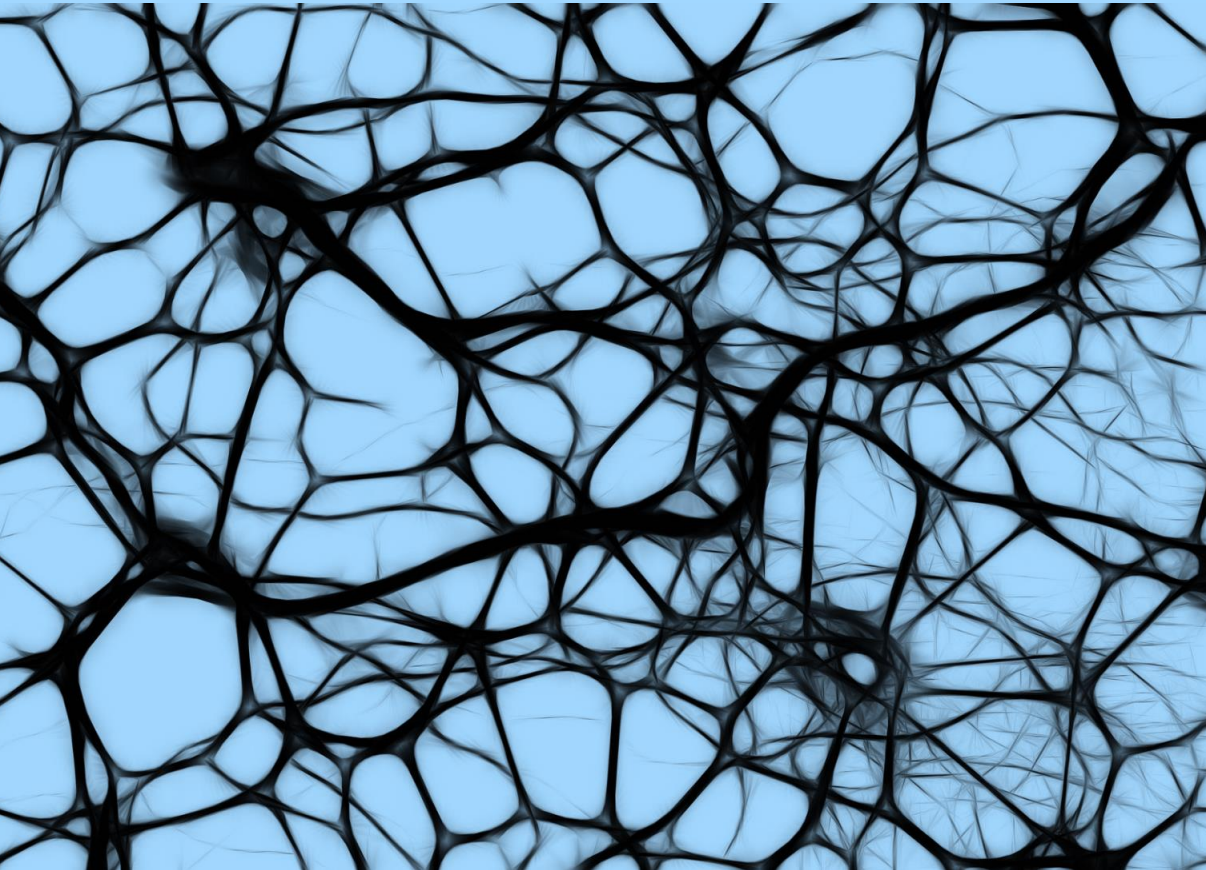


Learning Systems Update

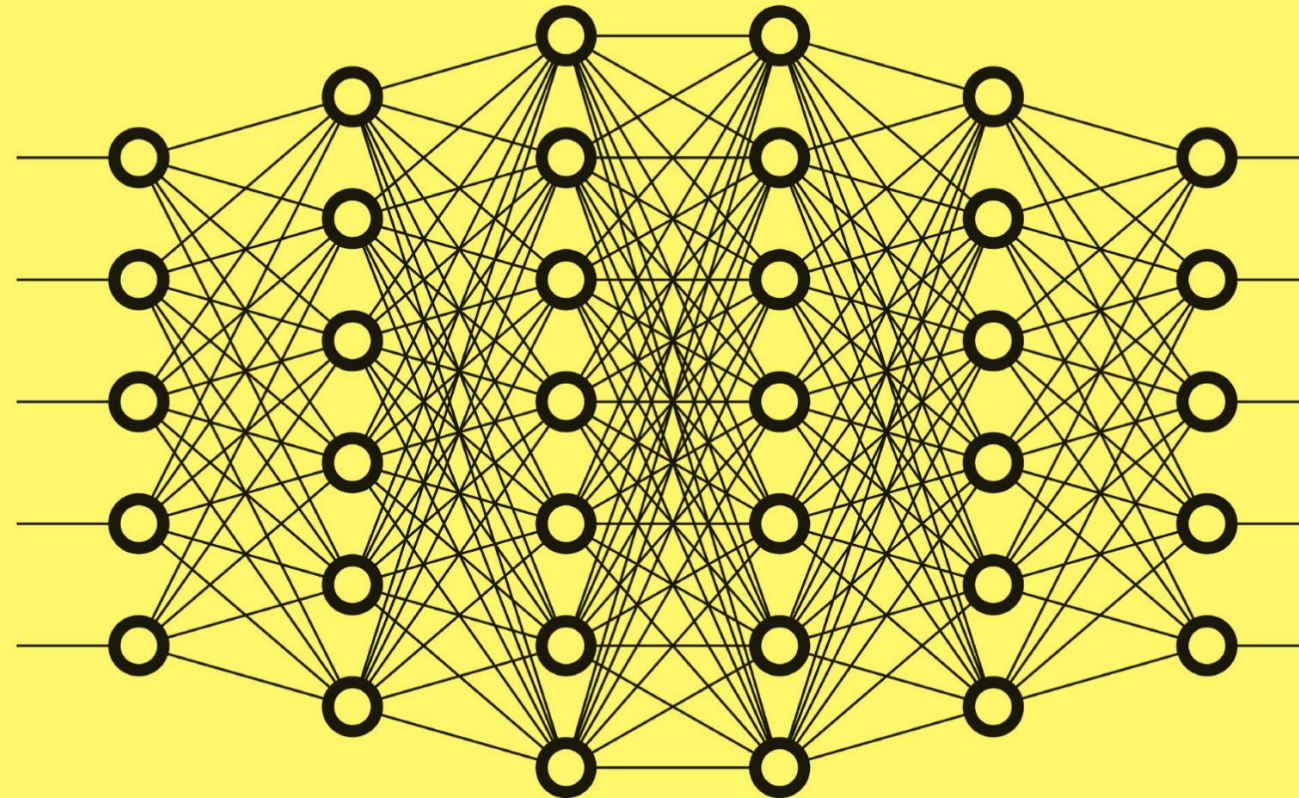
$$W_{\text{NEW}} \leftarrow W_{\text{OLD}} + W_{\text{CHANGE}}$$

Deep Learning

Large number of connections
between biological neurons



Large number of connections
between AI neurons



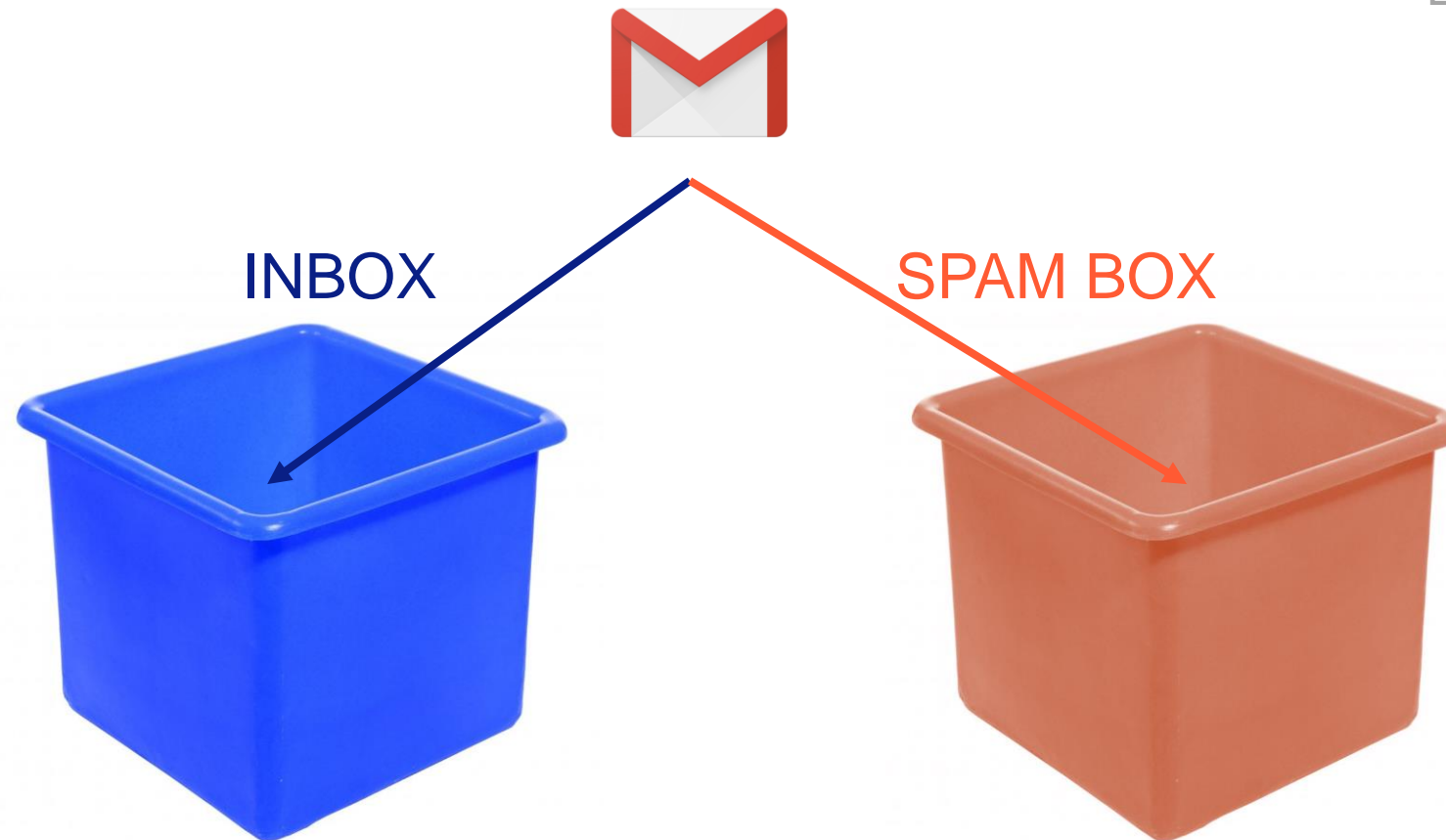
Text Processing: Email filter

Source: talosintelligence.com

65 BILLION
AVERAGE DAILY EMAIL

Legitimate **15%**

Spam **85%**



Speech Processing



Siri, Apple




Google Assistance



Image Processing



Florist 

RBSFT Education

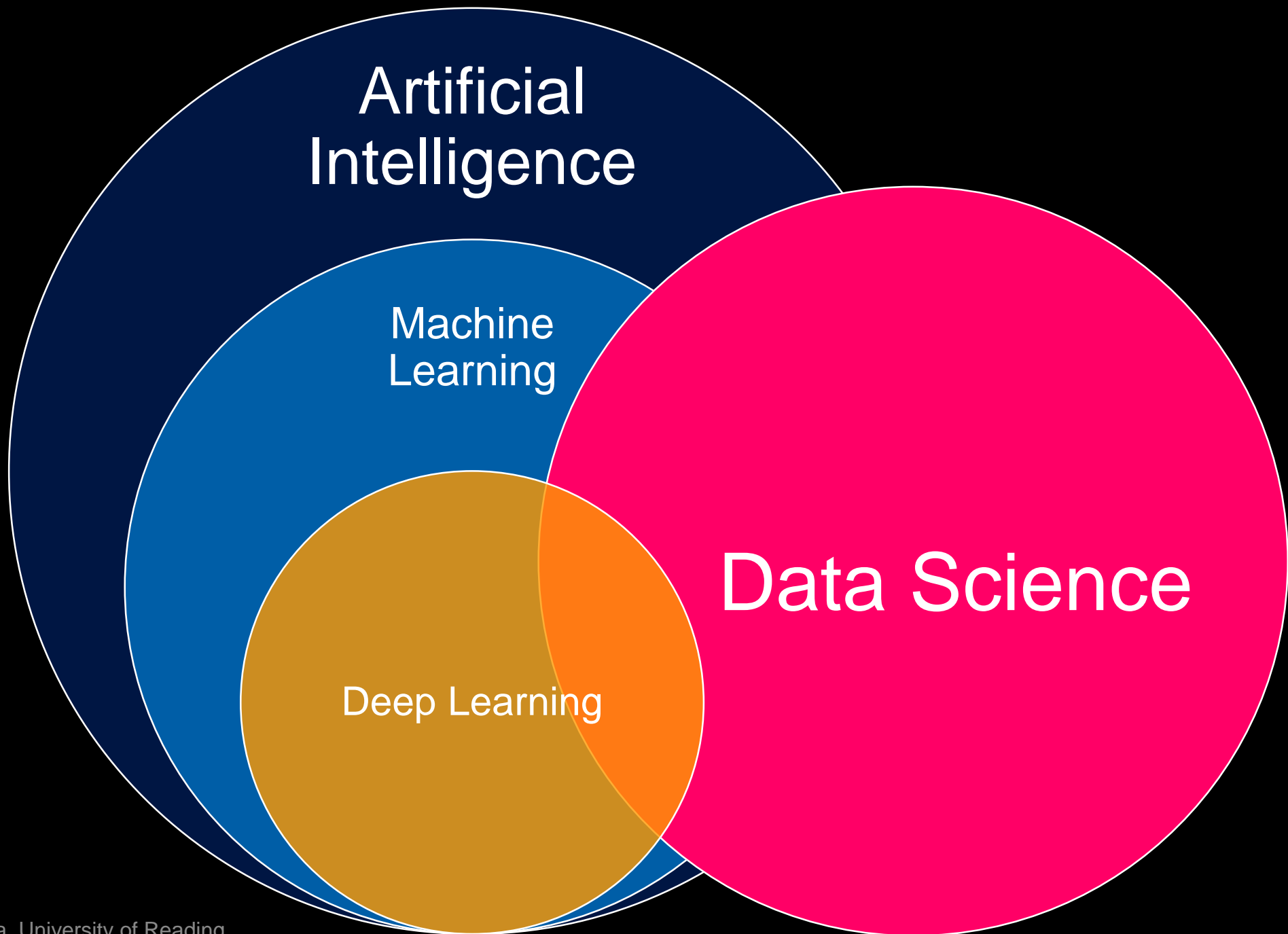
PEGI 3

This app is compatible with your device

Video Source: https://youtu.be/9TVS_3BCBhl



Video Processing



Customer purchase behaviour analysis



Beer and Nappies: The Unexpected Correlation

IF someone buys **Nappies** they also buy **Beer**

- 1992, Karen Heath, Teradata

Fraud Detection

Detects unusual transactions



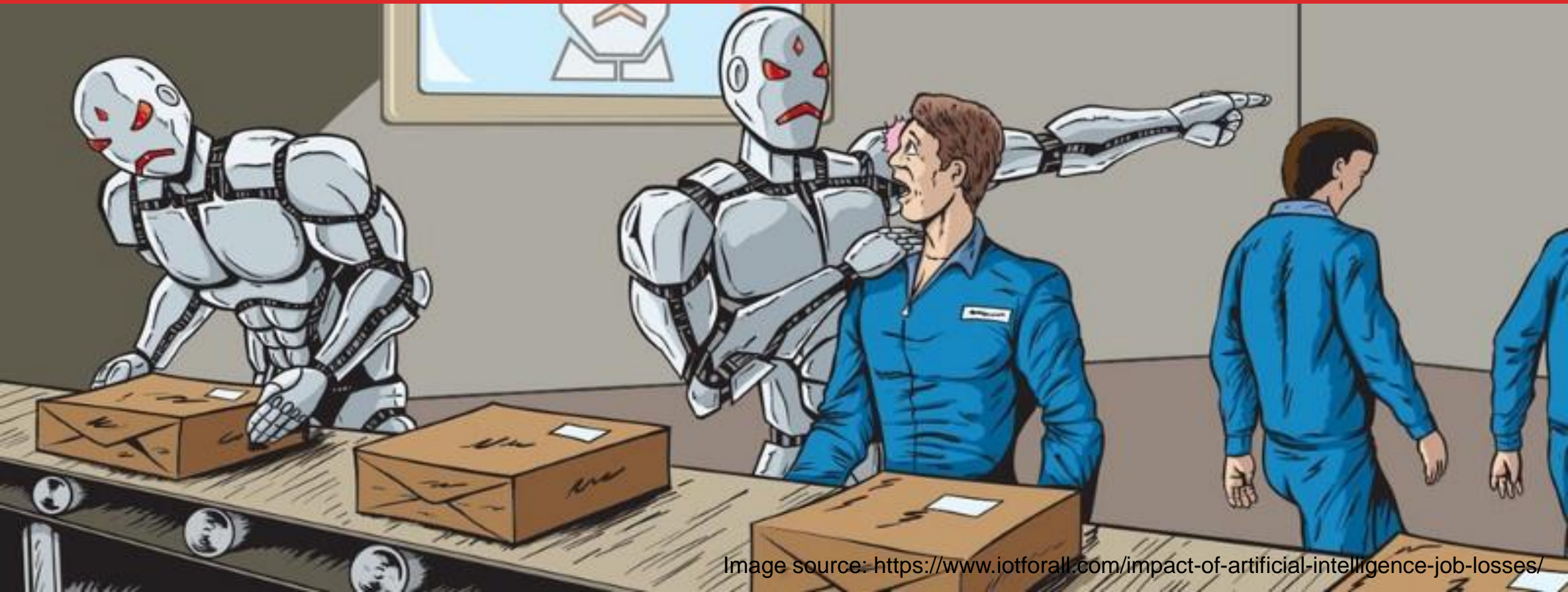
For UK-issued card in 2018

Card fraud saved
£1.12 billion ↑

Undetected card fraud
£671.4 million ↓

Will robots and AI take your job? The economic and political consequences of automation

Darrell M. West · Wednesday, April 18, 2018



Chatbot

Hi, I am looking for a one bedroom apartment in Montreal. My budget is \$500k. I need an indoor parking.



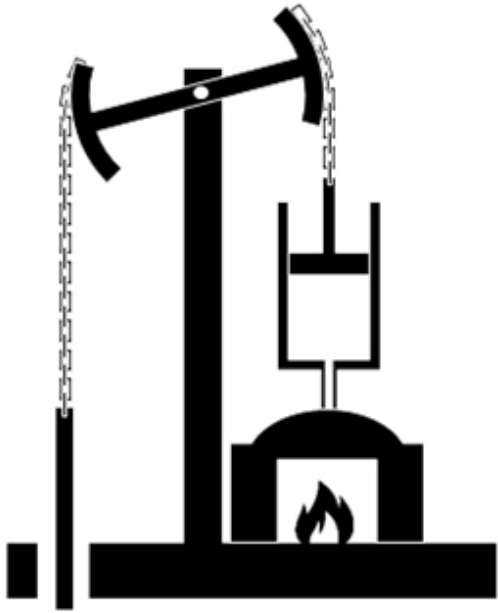
Hi! I'm Roof the real estate bot. When are you looking to move?

I want to move by the end of February!



Awesome! One of my colleagues will be with you shortly 😊

AI is the new Electricity



1.0

Mechanization
Steam engine



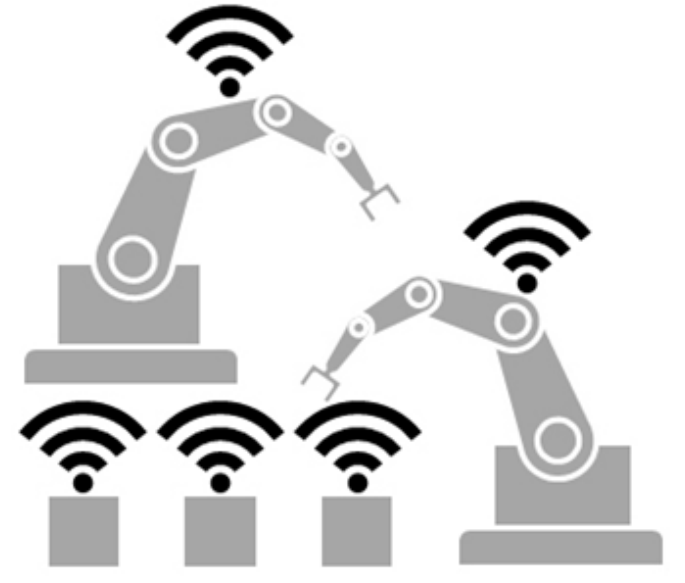
2.0

Mass production
Electricity



3.0

Computers, Internet,
and automation

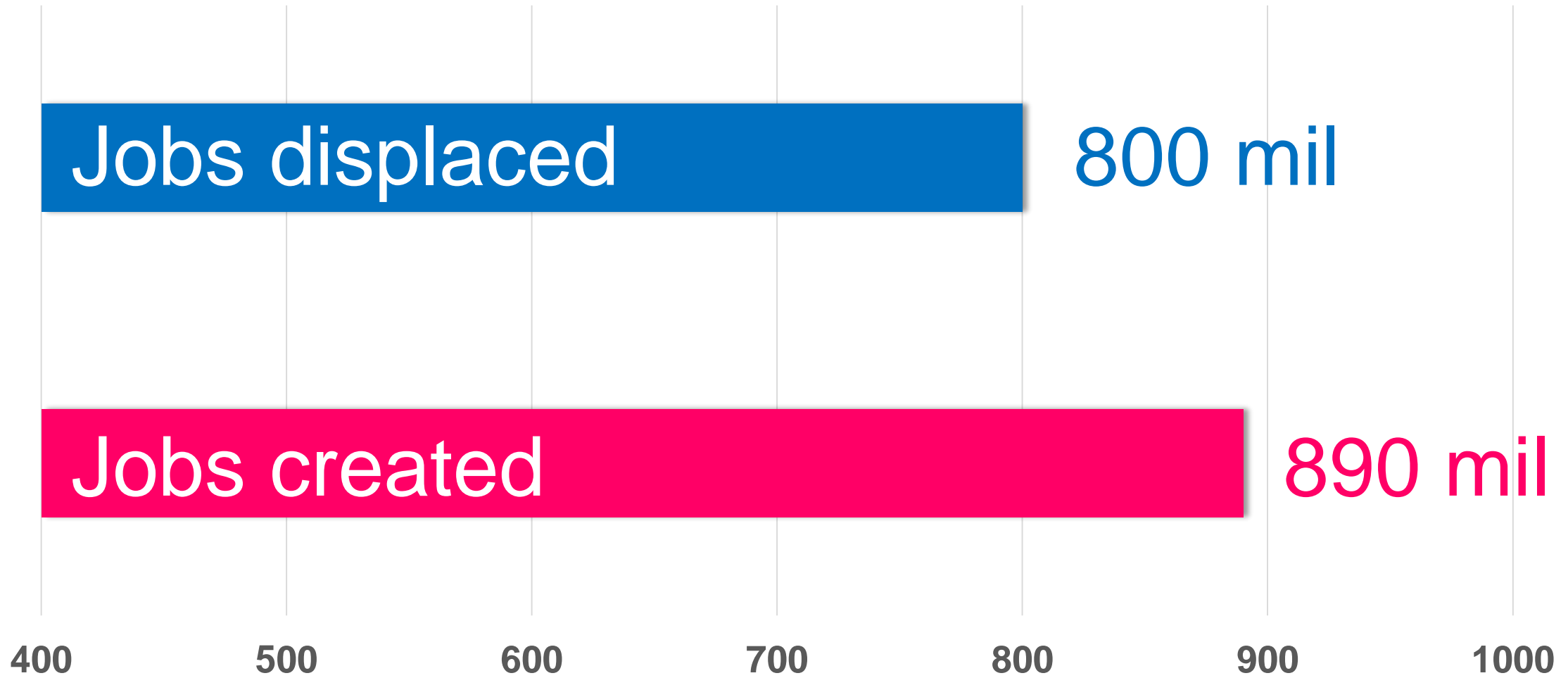


4.0

Artificial Intelligence
and Internet of Things

Future of Jobs and Society by 2030

Source: McKinsey Global Institute



“It's going to be interesting to see how society deals with artificial intelligence, but it will definitely be cool.”

— Colin Angle

American businessperson, CEO iRobot