

THE FUNDAMENTAL CONCEPTS OF ARTIFICIAL INTELLIGENT (AI)

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JOINT SECRETARY GENERAL, FED. MES

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WHAT IS “AI” ?

WHAT DOES AN “AI” DO?



Disney · PIXAR

WALL·E

CAPABLE TO



- **Generalized Learning**
- **Reasoning**
- **Problem Solving**

THE MAIN CLASSIFICATION OF AI



STRONG AI

AKA artificial general intelligence, an AI system with generalized human cognitive abilities. When presented with an unfamiliar task, it has enough intelligence to find a solution.



WEAK AI

AKA narrow AI, an AI system that is designed and trained for a particular task. Example: a virtual personal assistant, such as Apple's Siri.

Narrow AI	General AI
○ Application specific/ task limited	○ Perform general (human) intelligent action
○ Fixed domain models provided by programmers	○ Self-learns and reasons with its operating environment
○ Learns from thousands of labeled examples	○ Learns from few examples and/or from unstructured data
○ Reflexive tasks with no understanding	○ Full range of human cognitive abilities
○ Knowledge does not transfer to other domains or tasks	○ Leverages knowledge transfer to new domains and tasks
○ Today's AI	○ Future AI?

ARTIFICIAL INTELLIGENCE

Programs with the ability to learn and reason like humans

MACHINE LEARNING

Algorithms with the ability to learn without being explicitly programmed

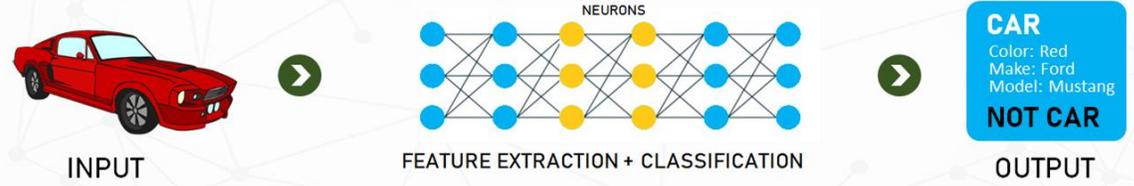
DEEP LEARNING

Subset of machine learning in which artificial neural networks adapt and learn from vast amounts of data

MACHINE LEARNING



DEEP LEARNING





Let's have a look at the data generated per minute
on the internet



"2.1Million"



"3.8Million"



"1.0Million"



"4.5Million"



"188Million"

That's a lot of data

5V FRAMEWORK FOR BIG DATA



BIG DATA ANALYTICS PROCESSES

Data sources

- Web data
- Mobile app data
- Transactional data
- Separate files
- Databases Etc.

ETL/ELT data pipelines

- talend**
 - Extract, transform, load
 - Extract, load, transform
- Events data streaming
- APACHE kafka™**

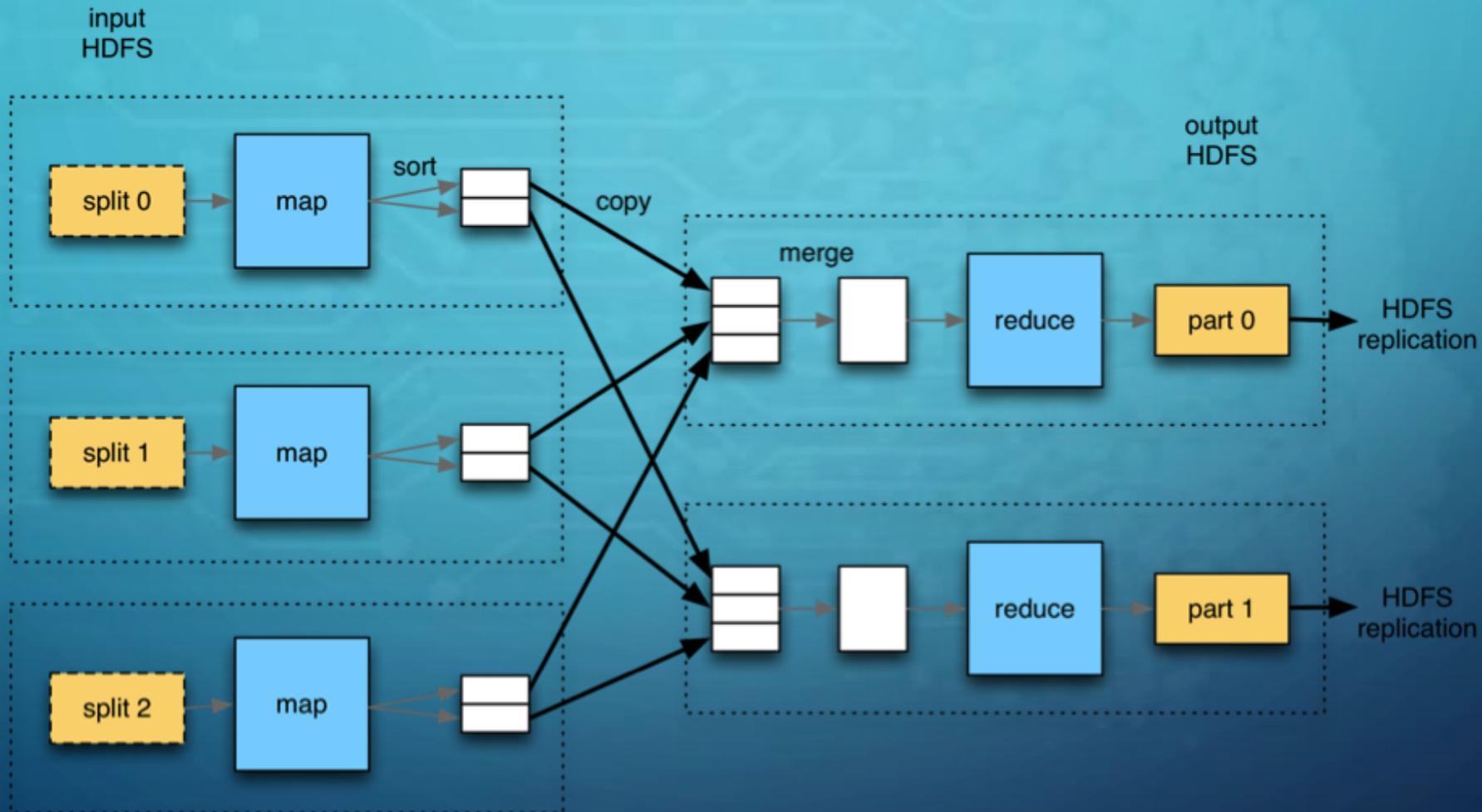
Data storage and processing

- hadoop**
- mongoDB®**
- Apache CASSANDRA**
- APACHE Spark™**
- DynamoDB**
-

Data analysis

-
- Real-time analytics
- Reporting tools
- Business intelligence tools
- Interactive dashboards

APACHE HADOOP MAPREDUCE



SMART MACHINES

A smart machine is a **device embedded with machine-to-machine (M2M) and/or cognitive computing technologies such as artificial intelligence (AI), machine learning or deep learning**, all of which it uses to reason, problem-solve, make decisions and even, ultimately, take action.



AI IN ROBOTS

Are robotics and artificial intelligence the same thing?

Though sometimes (incorrectly) used interchangeably, robotics and artificial intelligence are very different things.

Artificial intelligence is where systems emulate the human mind to learn, solve problems and make decisions on the fly, without needing the instructions specifically programmed.

Robotics is where robots are built and programmed to perform very specific duties.

In most cases, this simply doesn't require artificial intelligence, as the tasks performed are predictable, repetitive and don't need additional 'thought'.

What is the role of artificial intelligence in robots?

Despite this, robotics and artificial intelligence can coexist. Projects using AI in robotics are in the minority, but such designs are likely to become more common in future as our AI systems become more sophisticated.

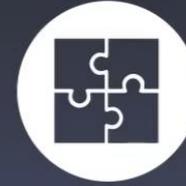
INDUSTRY 4.0



AUTONOMOUS
ROBOTS



SIMULATION



SOFTWARE
INTEGRATION



INDUSTRIAL
INTERNET



CYBER
SECURITY



CLOUD



ADDITIVE
MANUFACTURING



AUGMENTED
REALITY

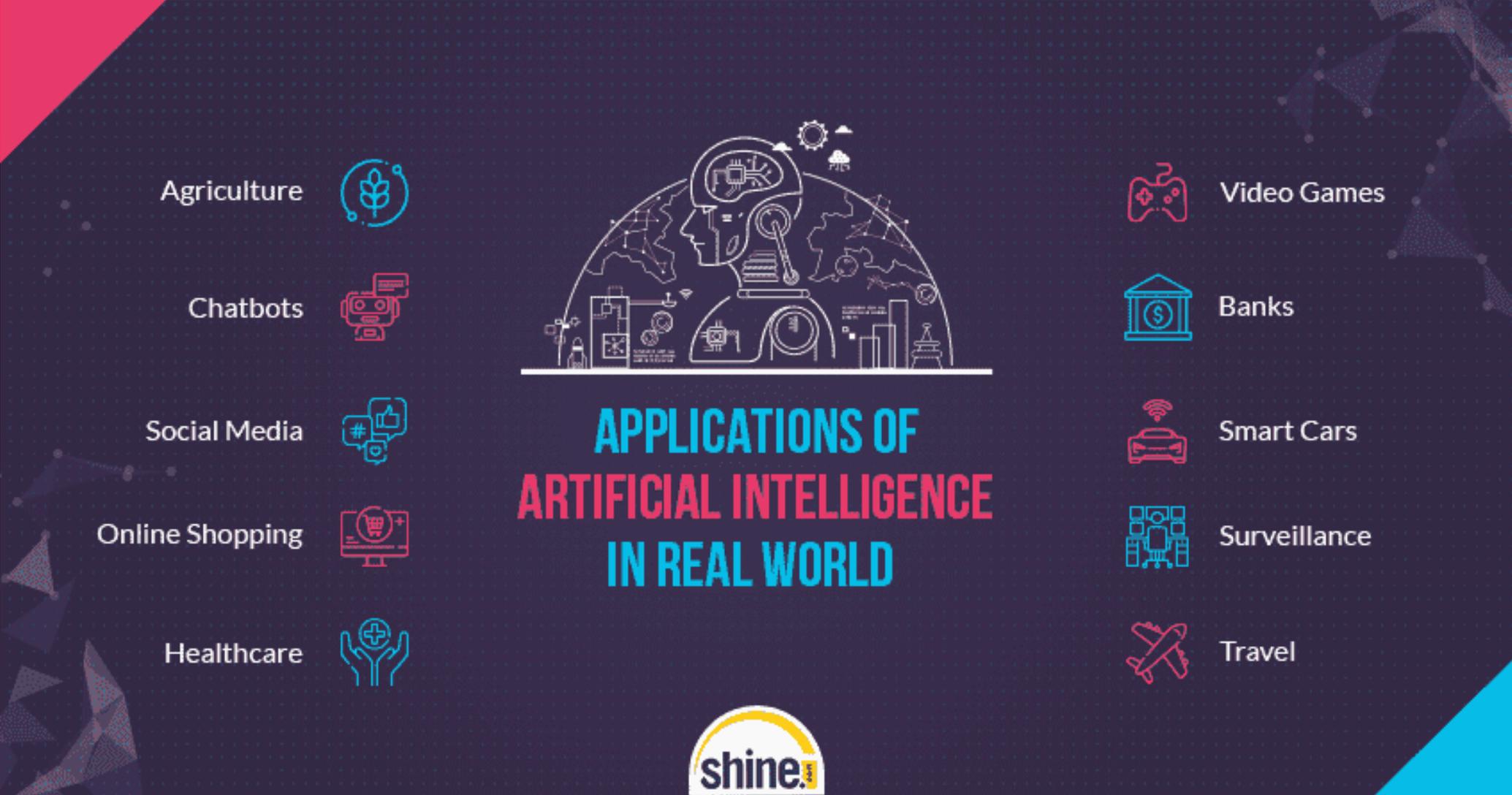


BIG DATA
& ANALYTICS

Markus Lorenz: Industry 4.0: how intelligent machines will transform everything we know

<https://www.youtube.com/watch?v=uBZmJOHIN8E>

TOP 10 REAL WORLD AI APPLICATIONS



APPLICATIONS OF ARTIFICIAL INTELLIGENCE IN REAL WORLD

- Agriculture
- Chatbots
- Social Media
- Online Shopping
- Healthcare
- Video Games
- Banks
- Smart Cars
- Surveillance
- Travel

shine.com

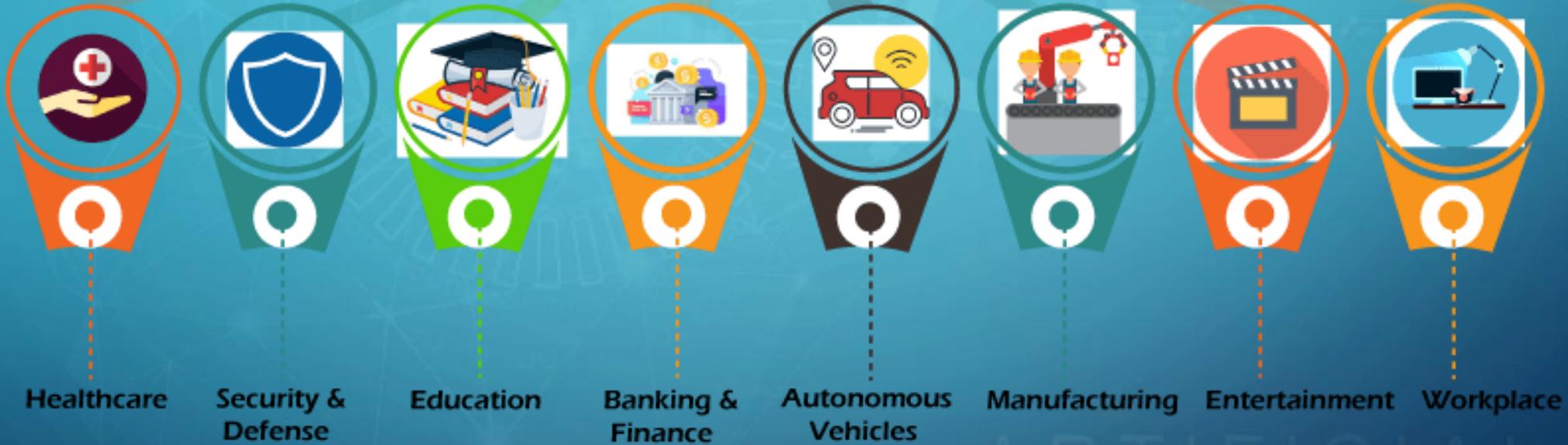
Pros

- Decisions taken by a machine are based on a set of algorithms; which reduces room for error
- The ability to take right decisions in a short span of time
- Situations where the safety of a human is unsure, an AI machine that is fitted with predefined algorithms can be used
- Since a machine does not get tired, it can work continuously without taking any breaks

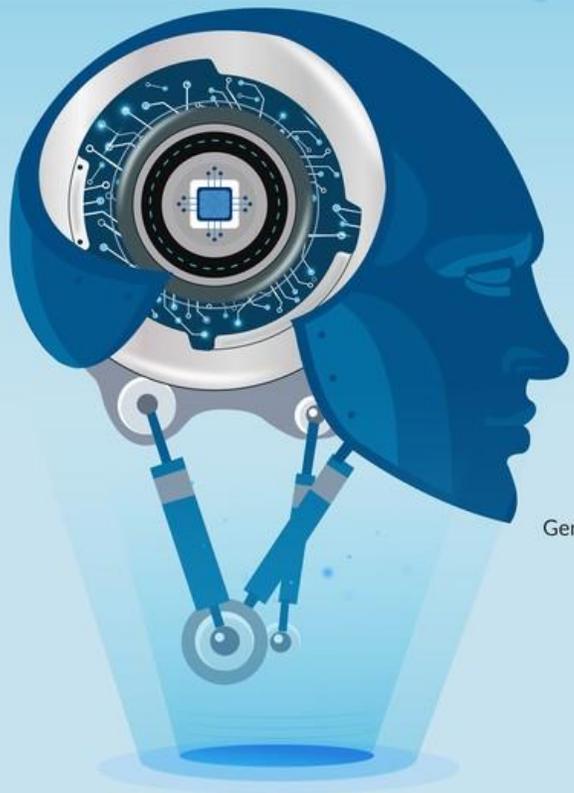
Cons

- The overall cost of implementing an AI machine is huge; only a few can make use of it
- The dependency of humans on machines is ever increasing
- With efficient and 24*7 AI & automation, human jobs will soon be replaced by machines in the future
- Machines cannot think creatively or out of the box and will not perform such tasks

Future of AI

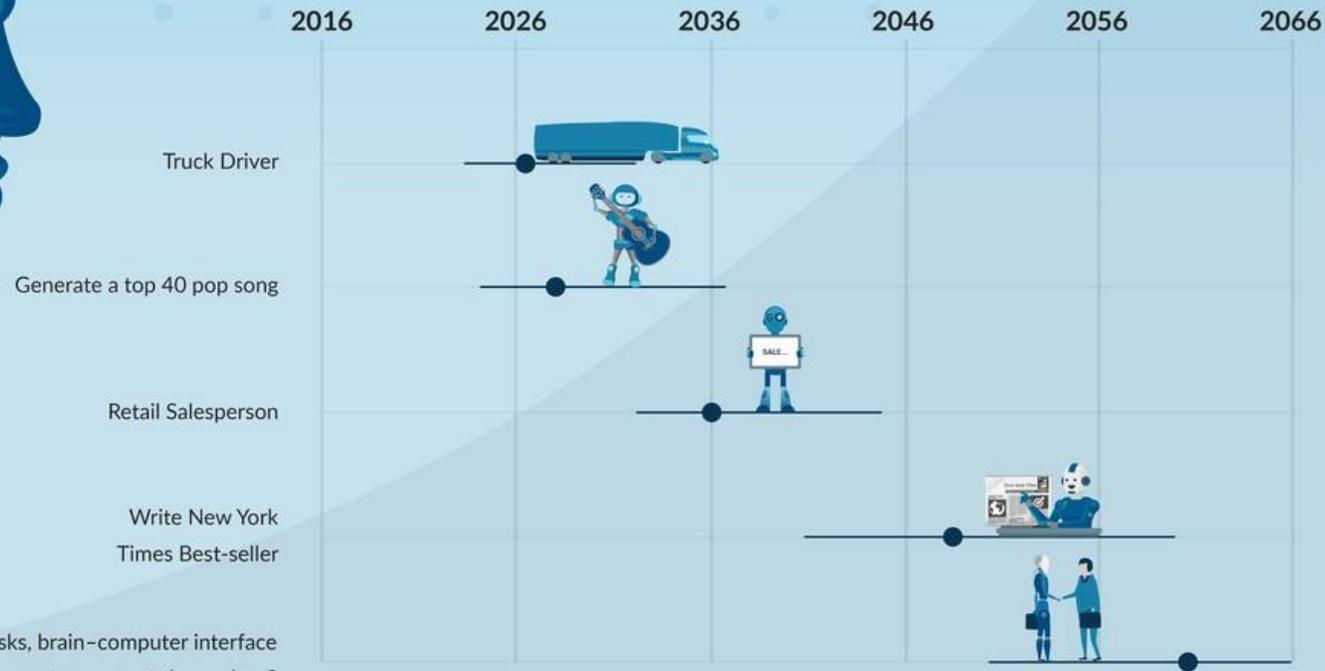


ARTIFICIAL
INTELLIGENCE



The Future of AI:

Timelines for Tasks that Machines will Perform



www.dls.ltd



@deeplearn007

All Human tasks, brain-computer interface allows humans to augment themselves?

Source: Grace et al. When Will AI Exceed Human Performance? Evidence from AI Experts, & our own view

HOW 'AI' WILL CHANGE THE FUTURE?

According to a research by scientists at the University of Oxford, Artificial Intelligence will be better than humans at

- translating languages by 2024,
- writing school essays by 2026,
- selling goods by 2031,
- write a bestselling book by 2049, and
- conducting surgeries by 2053.





Markus Lorenz: Industry 4.0: how intelligent machines will transform everything we know

<https://www.youtube.com/watch?v=uBZmJOHIN8E>

Robotics and artificial intelligence: The role of AI in robots

<https://aibusiness.com/verticals/robotics-and-artificial-intelligence-the-role-of-ai-in-robots>

Top 10 Real-Life Artificial Intelligence Applications in 2022

<https://www.analyticsinsight.net/top-10-real-life-artificial-intelligence-applications-in-2022/>

What is the Future of Artificial Intelligence?

<https://www.thedigitalspeaker.com/future-artificial-intelligence/#:~:text=The%20Future%20of%20AI%20in,46.2%25%20by%20the%20year%202025.>

Pros and Cons of Artificial Intelligence

<https://intellipaat.com/blog/pros-and-cons-of-ai/>

ARTIFICIAL
INTELLIGENCE

THANK YOU



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