CTU
CZECH TECHNICAL UNIVERSITY IN PRAGUE

Uleam
UNIVERSIDAD LAICA
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Applications of Artificial Intelligence

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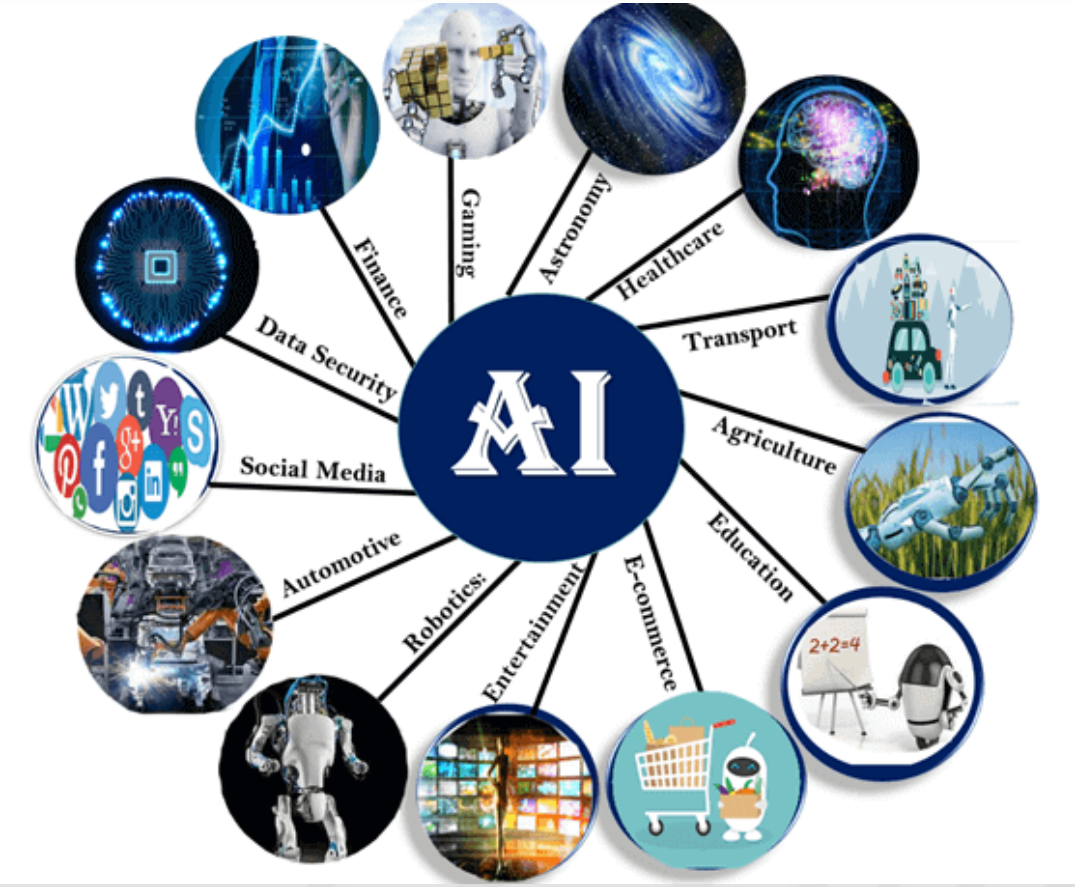
Robotics and Cybernetics

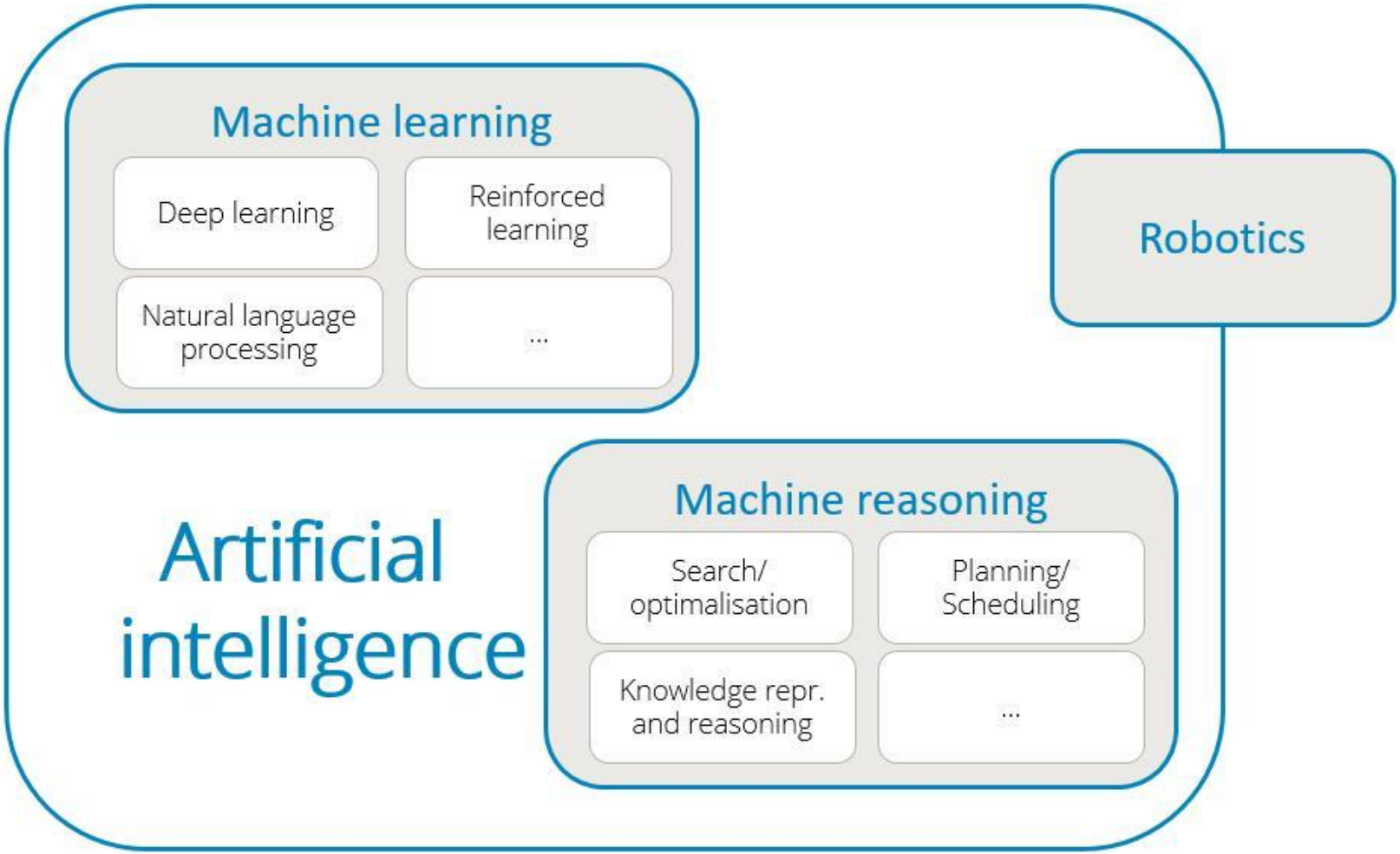
Today's lecture

Conventional programming vs ML

What is Artificial Intelligence?

- AI In Marketing
- AI In Banking
- AI In Finance
- AI In Agriculture
- AI In HealthCare
- AI In Gaming
- AI In Space Exploration
- AI In Autonomous Vehicles
- AI In Chatbots




Machine learning
Deep learning
Reinforced learning
Natural language processing
...
Robotics
Artificial intelligence
Machine reasoning
Search/ optimalisation
Planning/ Scheduling
Knowledge repr. and reasoning
...

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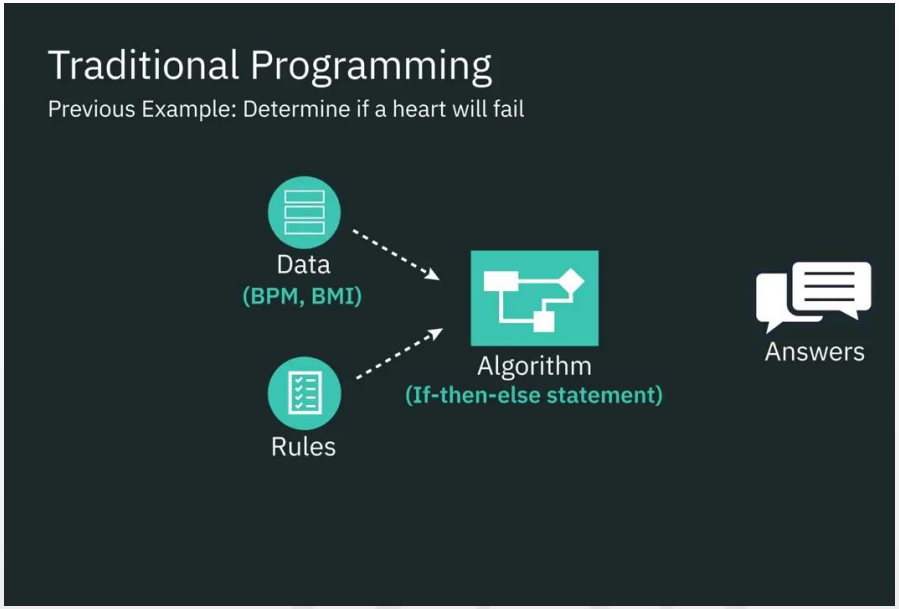
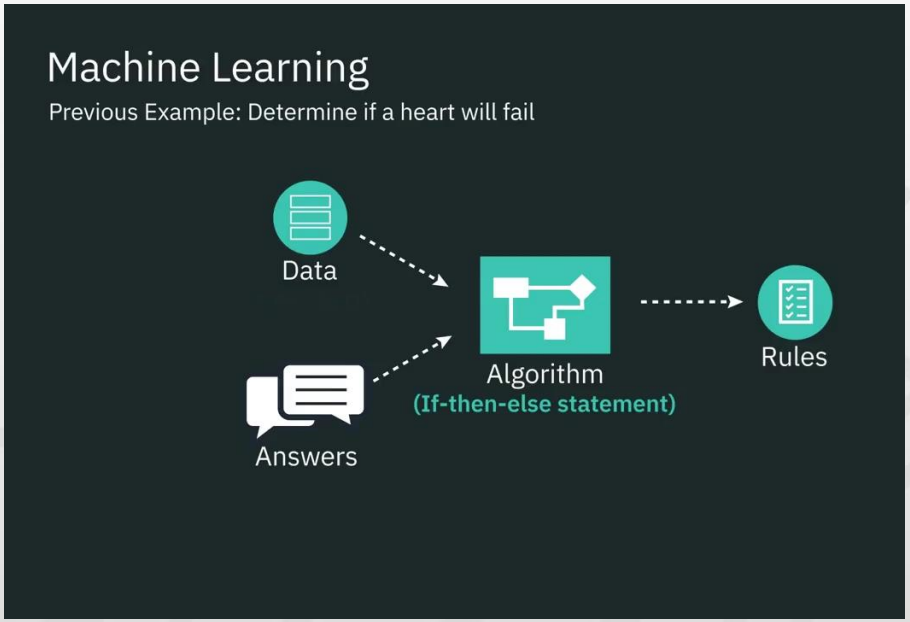
Conventional programming vs machine learning

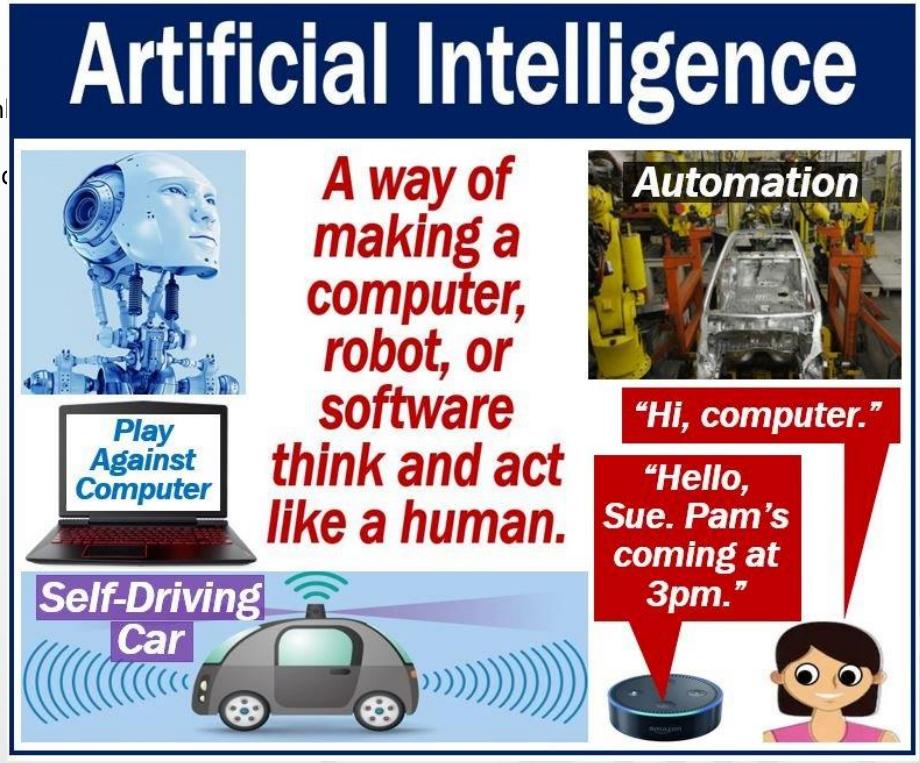




What is Artificial Intelligence?

AI is a method of programming a computer, robot, or other object to thin

AI is the study of how the human brain thinks, learns, makes decisions, an



In simple words

Artificial Intelligence is made up of the phrases Artificial and Intelligence, with Artificial referring to "man-made" and Intelligence referring to "thinking power,"

Cognitive: relating to the processes of thinking and reasoning

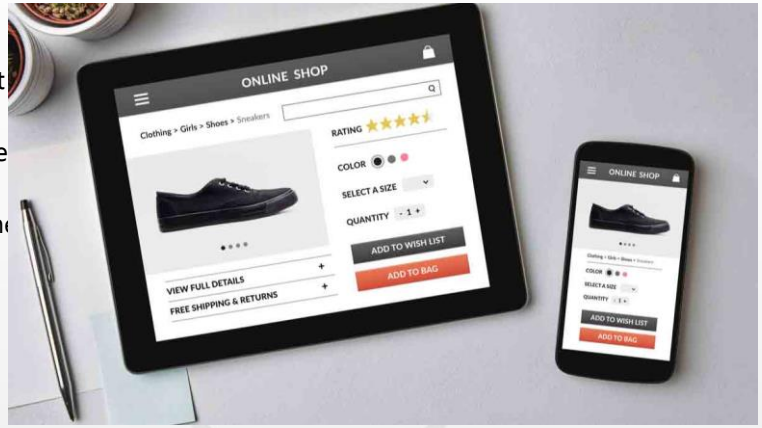
Artificial Intelligence Applications: Marketing

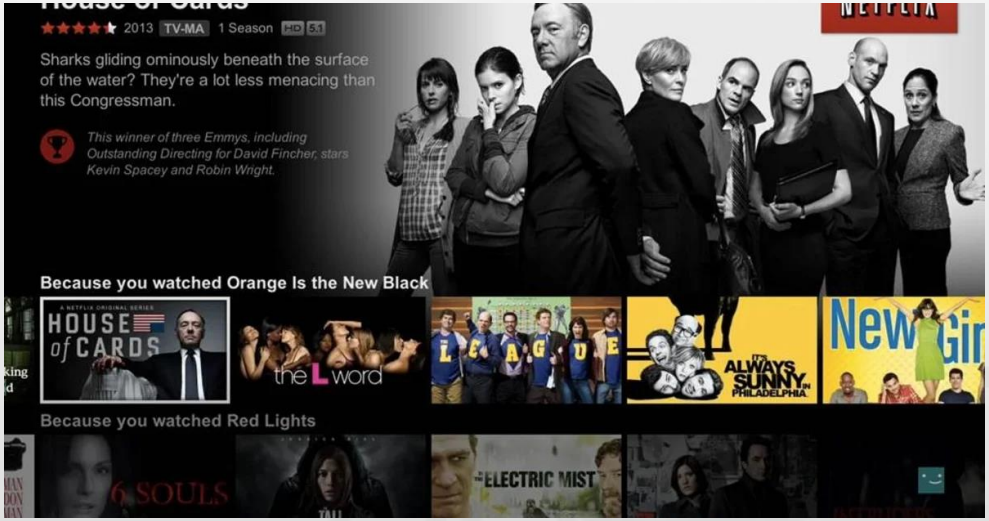
Marketing is a way to sugar coat your products to attract more customers.

Before, we searched an online store to find a product without knowing its exact name, it

Now, we search for an item on any e-commerce store, we get all possible results. It's like

In a matter of seconds, we get a list of all relevant items. An example of this is finding th





One reason why we're all obsessed with Netflix. It examines millions of

As the data set grows, this technology is getting smarter and smarter e

Sugarcoat: to make something seem more positive or pleasant than it really is

Artificial Intelligence Applications: Banking

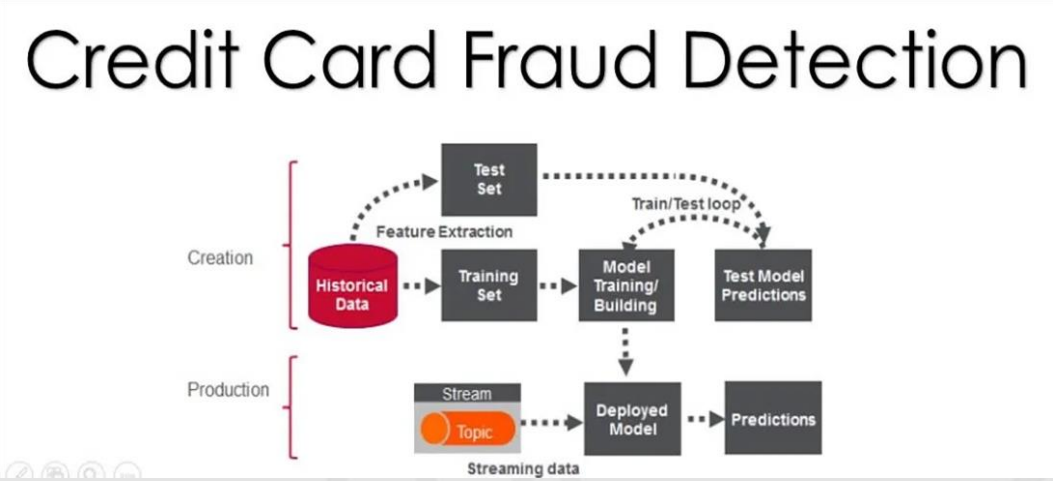
AI in banking is growing faster than you thought!

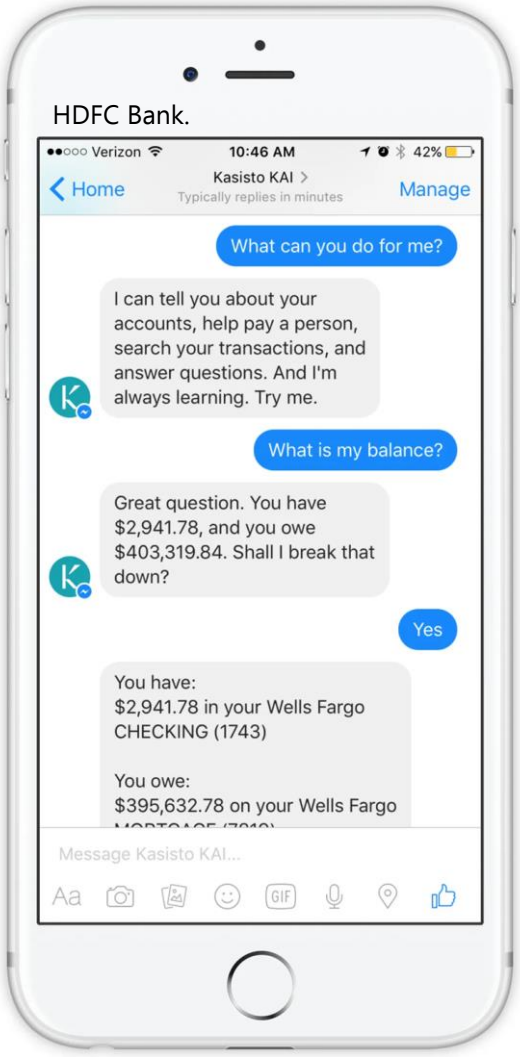
A lot of banks have already adopted AI-based systems to provide

Customer support,

Detect anomalies

Credit card frauds.





Companies such as MasterCard and RBS WorldPay have relied on AI and Deep Learning to detect fraudulent transaction patterns and prevent card fraud for yea

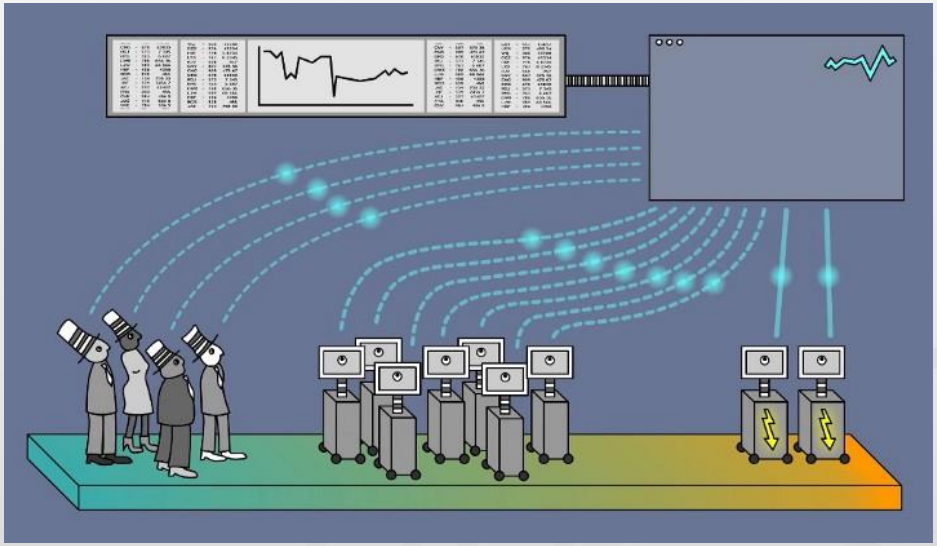
Artificial Intelligence Applications: Finance

Ventures have been relying on computers and data scientists to determine future

Trading mainly depends on the ability to predict the future accurately.

Machines are great at this because they can crunch a huge amount of data in a sh

Machines can also learn to observe patterns in past data and predict how these pa



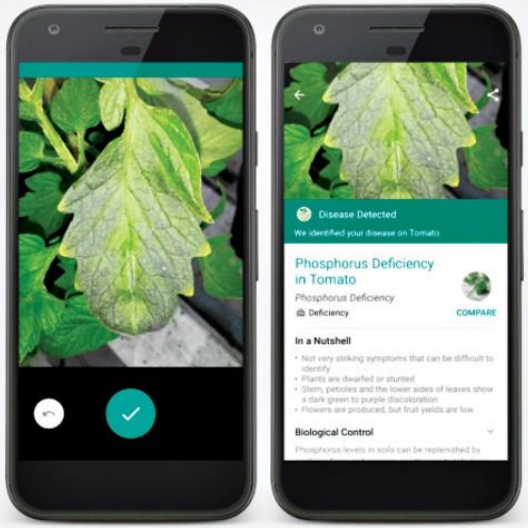
Left traders, Center ” common machine trading systems, Right HFT high frequency trading (ML)

Artificial Intelligence Applications: In Agriculture

Plantix - a mobile app revolutionizes farming with a little help from AI

Plantix was developed by PEAT GmbH, a Berlin-based AI startup.

The app claims to diagnose pest damages, plant diseases and nutrient deficiencies affecting crops and offers corresponding treatment measures.



See&Spray

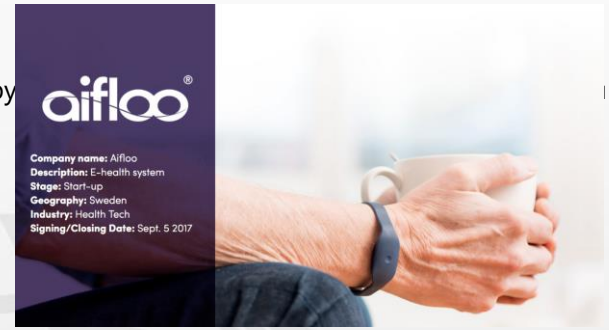
Artificial Intelligence Applications: In HealthCare

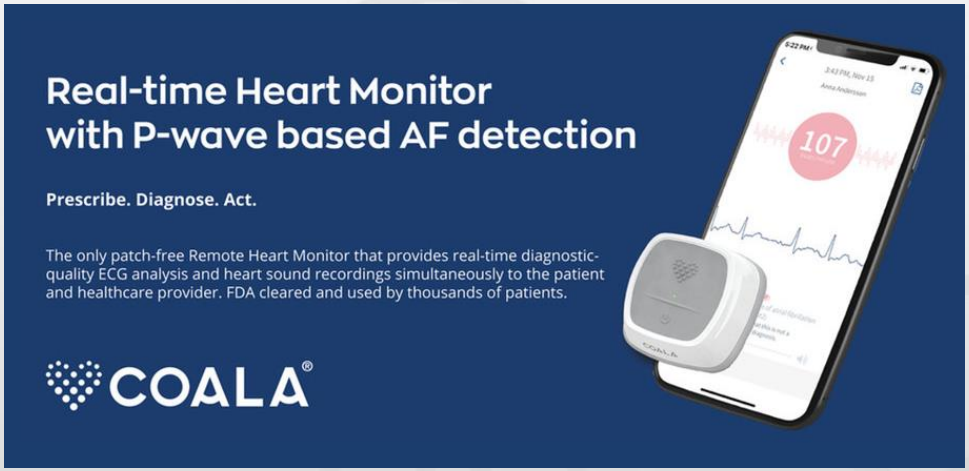
AI applications are used in healthcare to build sophisticated machines that can detect diseases and identify cancer cells.

Coala life which is a company that has a digitalized device that can find cardiac diseases.

Aifloo is developing a system for keeping track of how people are doing in home care.

The best thing about AI in healthcare is that you don't even need to develop a new medication. Just by car





heartMonitor aifloo RoboticSurgery

Artificial Intelligence Applications: Gaming

Another sector where Artificial Intelligence applications have found prominence is the gaming sector.

AI can be used to create smart, human-like NPCs to interact with the players.

AI in gaming refers to responsive and adaptive video ga

These AI-powered interactive experiences are usually generated via non-player characters, or NPCs, that

Deep Blue was a chess-playing expert system run on a unique

Go is a game invented thousands of years ago in China and has evolved into one of the most complex ar

The Go community was devastated when DeepMind's AlphaGo defeated Lee Sedol in four out of five ma

By defeating the next four best players on Earth, AlphaGo demonstrated to everyone that AI is superior t

NPCs, or non-player characters, are the characters in a game that are controlled by the game itself, rather than by the player.

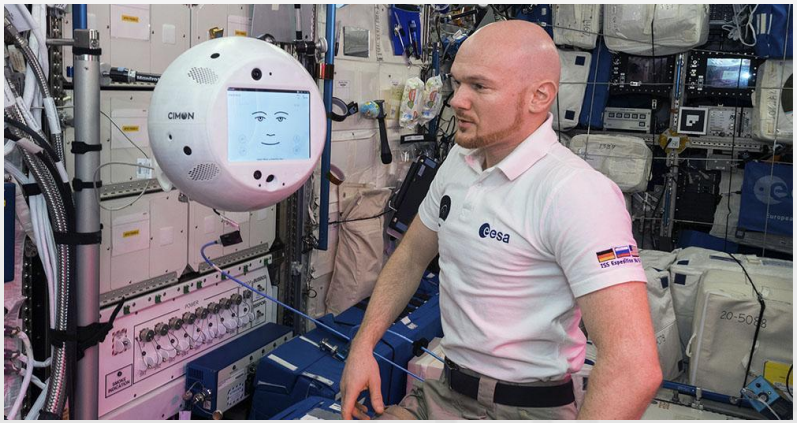
GamingAI infGames

Artificial Intelligence Applications: Space Exploration

Space expeditions and discoveries always require analyzing vast amounts of data.

Artificial Intelligence and Machine learning is the best way to handle and process data on this scale.

Many companies, such as NASA, the European Space Agency (ESA) and SpaceX, are already using AI as a way to improve exploration, find new celestial objec



Robonaut is a dexterous humanoid robot designed to expand NASA's ability for construction a

AUTONOMOUS ROVERS

IMAGE ANALYSIS AUTOMATION

INTELLIGENT NAVIGATION SYSTEM

Dexterous: having the ability to perform a difficult action quickly and skilfully with the hands

Cimon

roverNasa

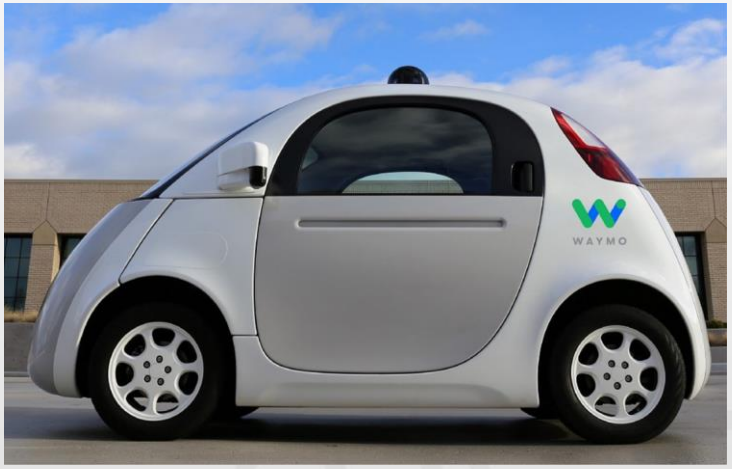
Artificial Intelligence Applications: Autonomous Vehicles

The development of autonomous vehicles will definitely revolutionaries the transport sys

The AI system collects data from the vehicles radar, cameras, GPS, and cloud services to

Advanced Deep Learning algorithms can accurately predict what objects in the vehicle's

sa



Waymo, a division of Alphabet, became the first company to offer su

Dexterous: having the ability to perform a difficult action quickly and skilfully with the hands

autoXChina roverNasa

Artificial Intelligence Applications: Chatbots

AI chatbots can comprehend natural language and respond to people online who use the "live chat" feature th

As AI continues to improve, these chatbots can effectively resolve customer issues, respond to simple inquiries,

Amazon's Echo is an example of how Artificial Intelligence can be used to translate human language into desira

It can do more than just play your favorite songs. It can be used to control the devices at your house, book cabs

flippyRobot

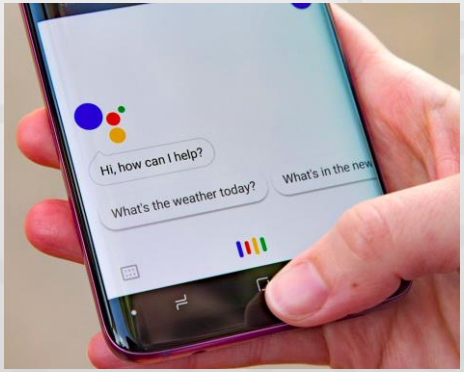
amazonShopping

burgeRobot

burgeRobot

hopperAPP

cortana



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Thanks

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