01. ARTIFICIAL INTELLIGENCE

M6U4P1

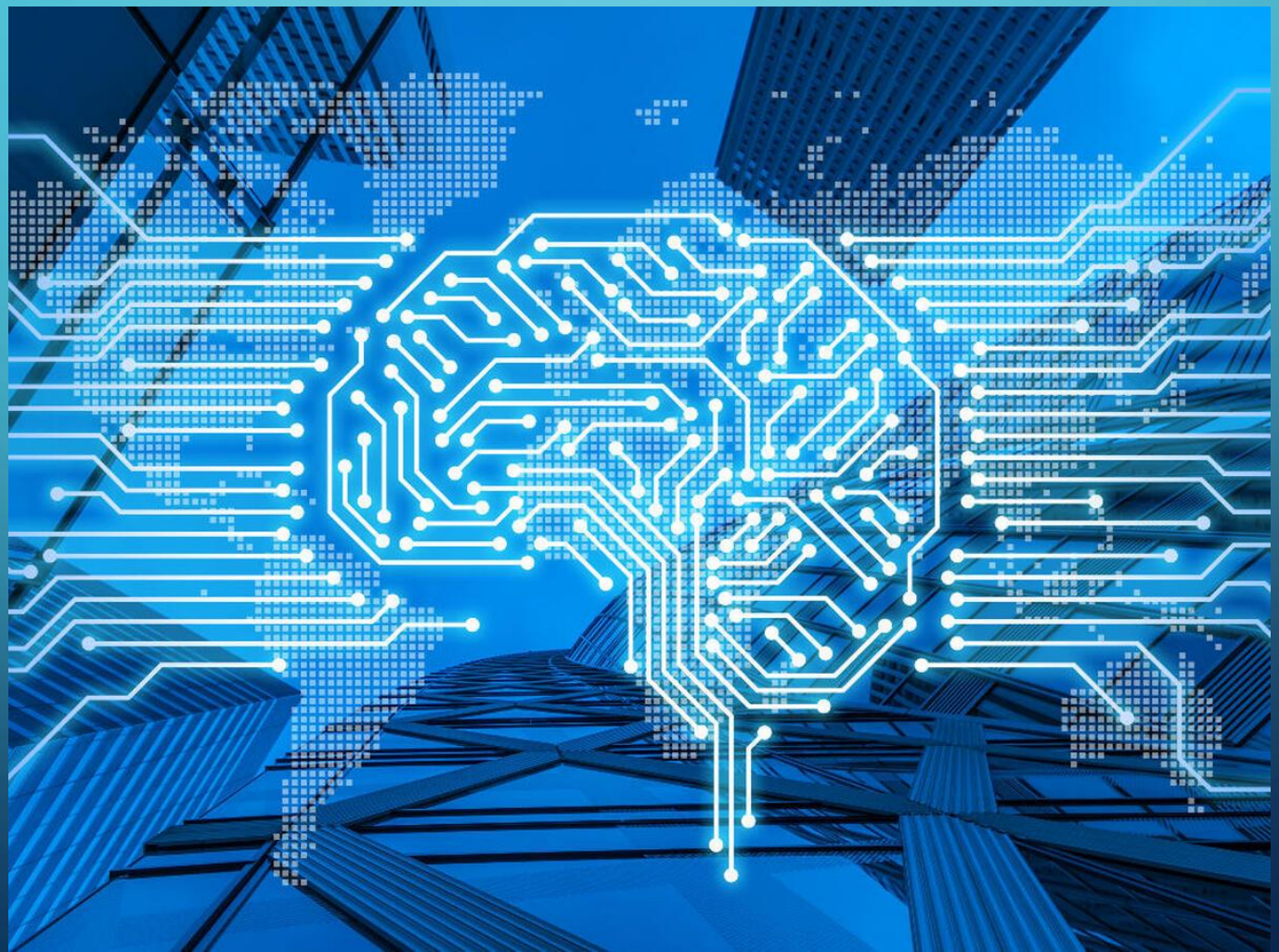
MODERN TECHNOLOGY

- Modern technology is something that completely changed how we humans live
- These modern technologies with the combination of high computing power and large databases of information can perform better than humans in many different fields

MODERN TECHNOLOGY

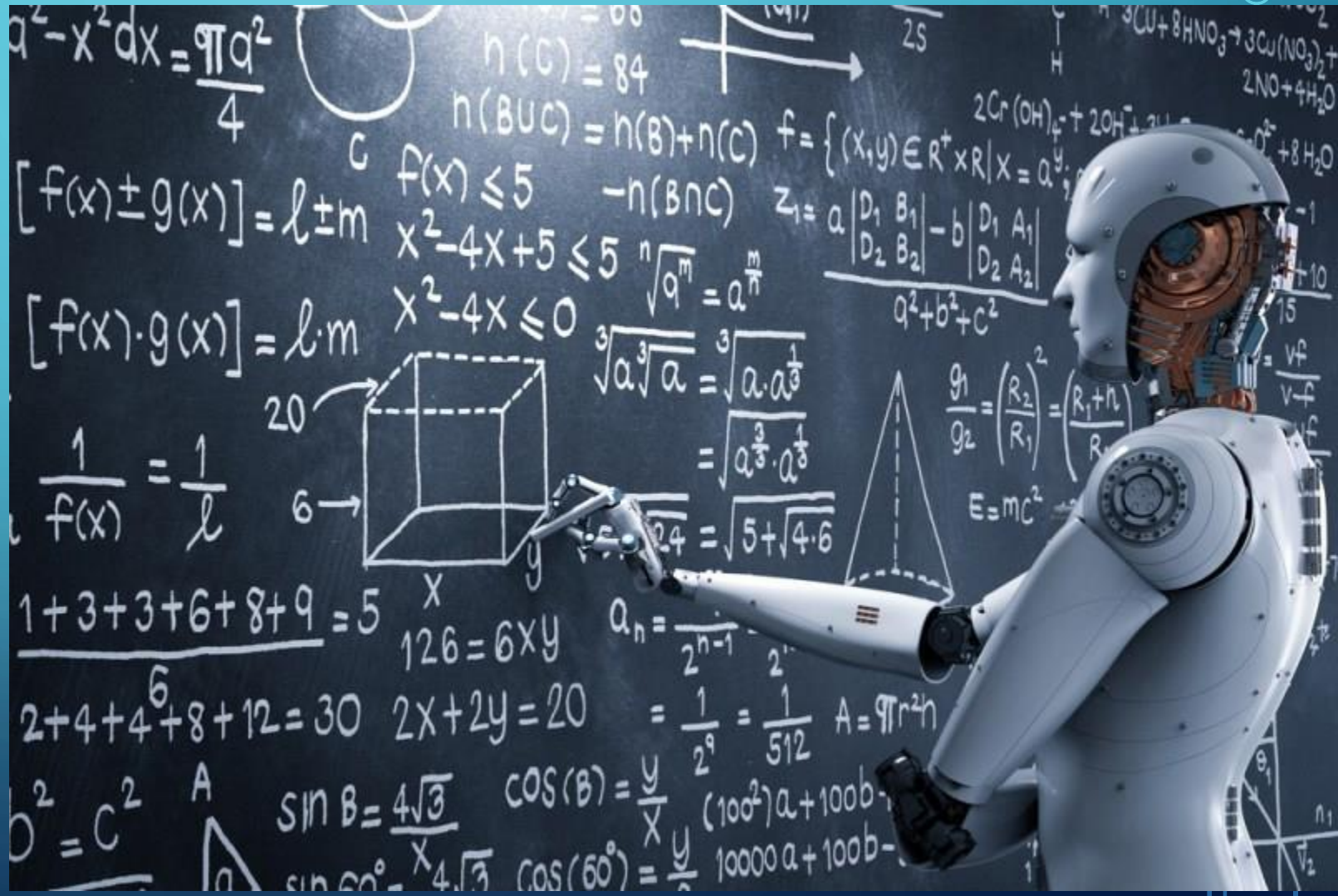
- Artificial Intelligence, Internet of Things and cloud technologies are used in combination to support our daily life in various fields such as:
  - Communication
  - Businesses
  - Finance
  - Industry
  - Agriculture
  - Transportation
  - Health
  - …

WHAT IS ARTIFICIAL INTELLIGENCE?



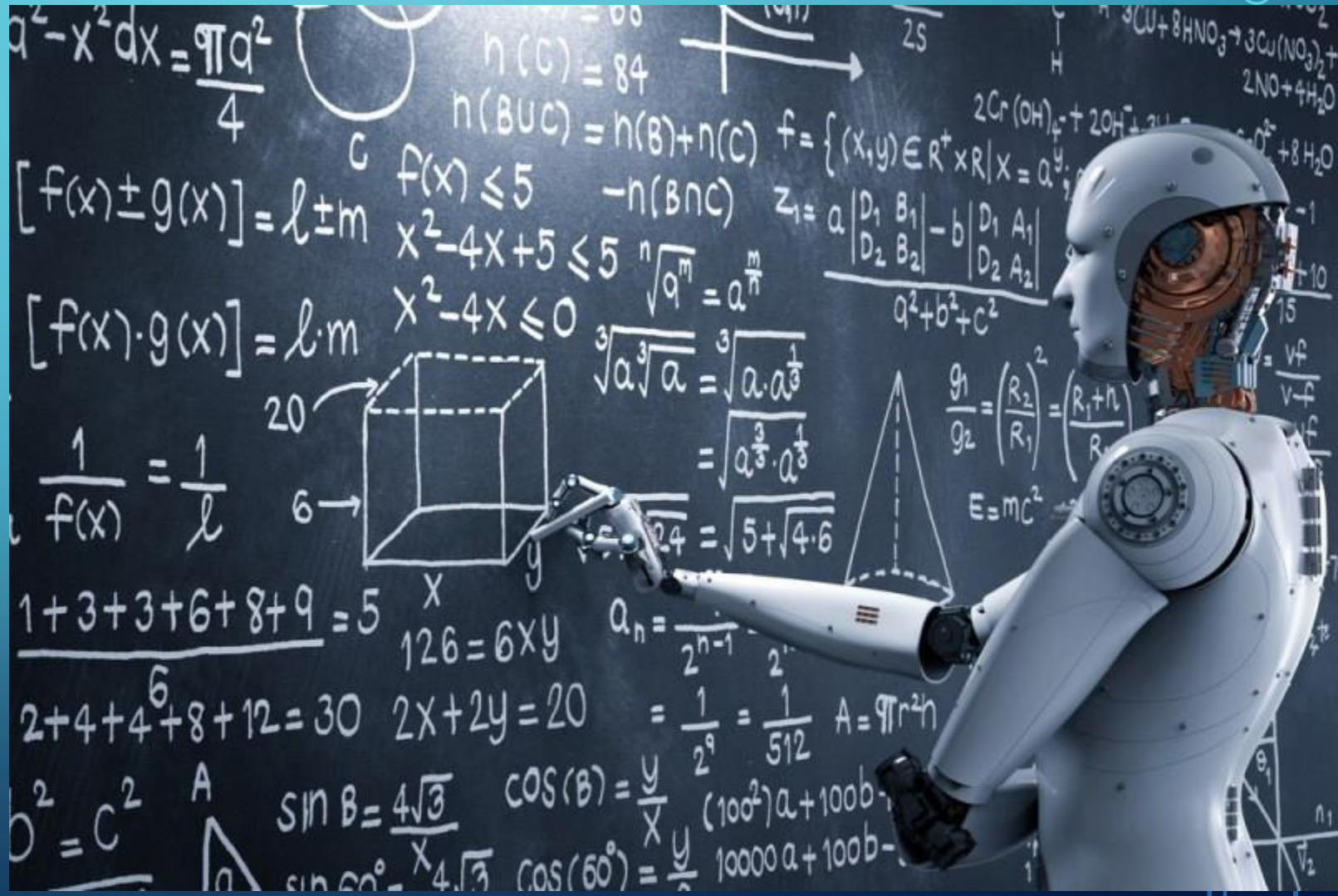
ARTIFICIAL INTELLIGENCE

- Artificial intelligence is the simulation of human intelligence processes by machines, especially computer systems.



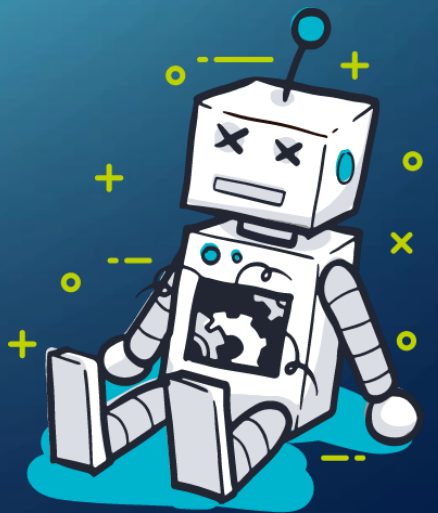
ARTIFICIAL INTELLIGENCE

- Artificial intelligence is the simulation of human intelligence processes by machines, especially computer systems.
- Maybe in the future…



ARTIFICIAL INTELLIGENCE

- At present, artificial intelligence is a branch of computer science that aims to create machine intelligence that can learn, think and make decisions like humans.
- Once the AI is fully developed, it will become a world changer like the Internet and mobile phones

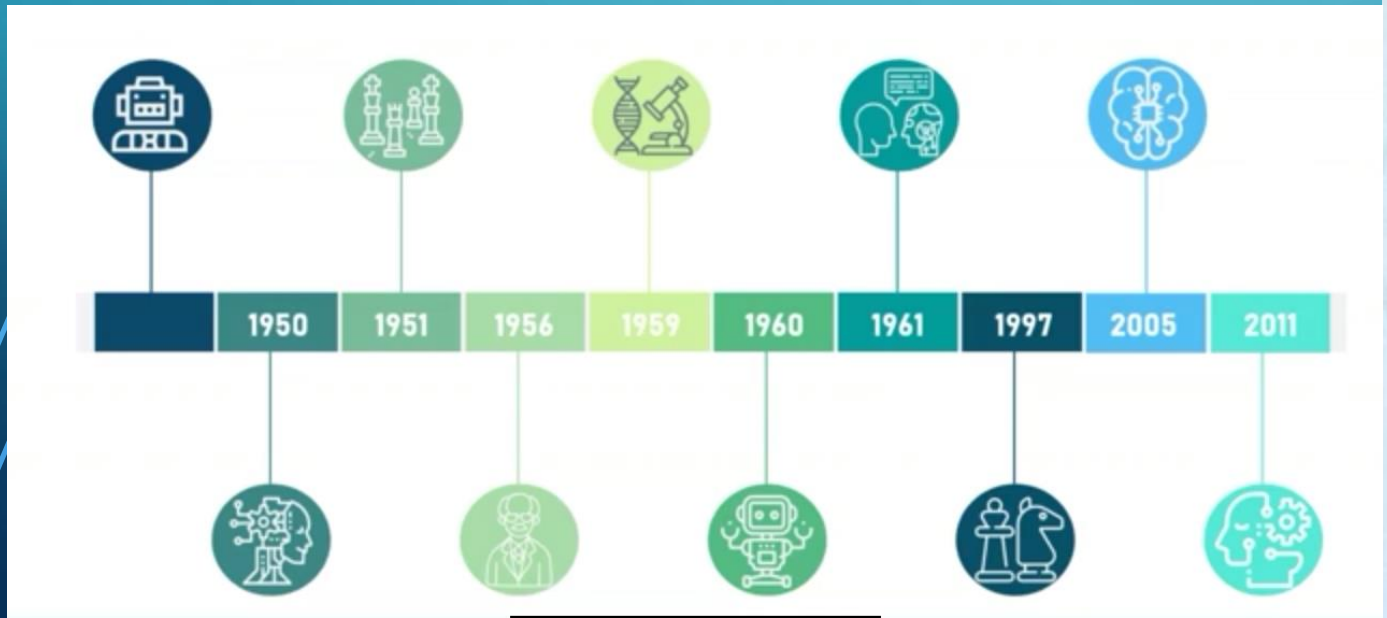


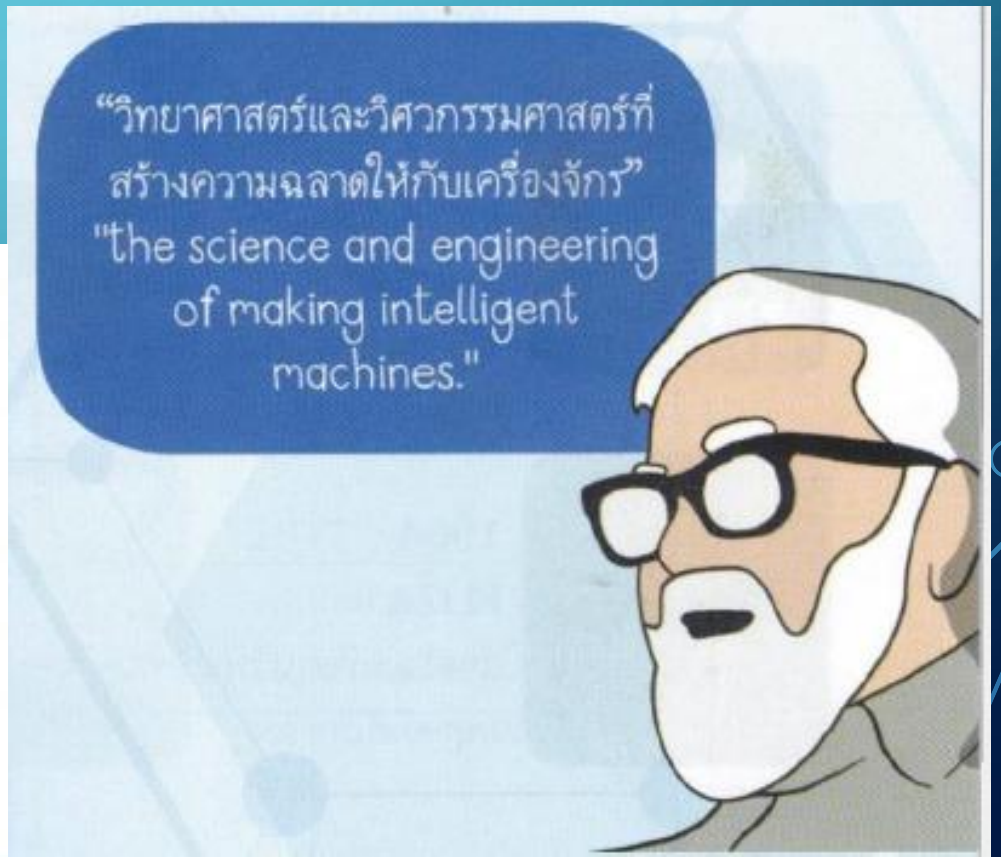
EXAMPLES OF TODAYS AI

- These are some examples of todays usage of AI
  - AlphaGo
  - Self Driving Cars
  - Personal Assistants (Siri, Cortana, Alexa, Google Assistant)
  - Autocorrect
  - Game AI
  - Do you know any other examples?

HISTORY OF ARTIFICIAL INTELLIGENCE

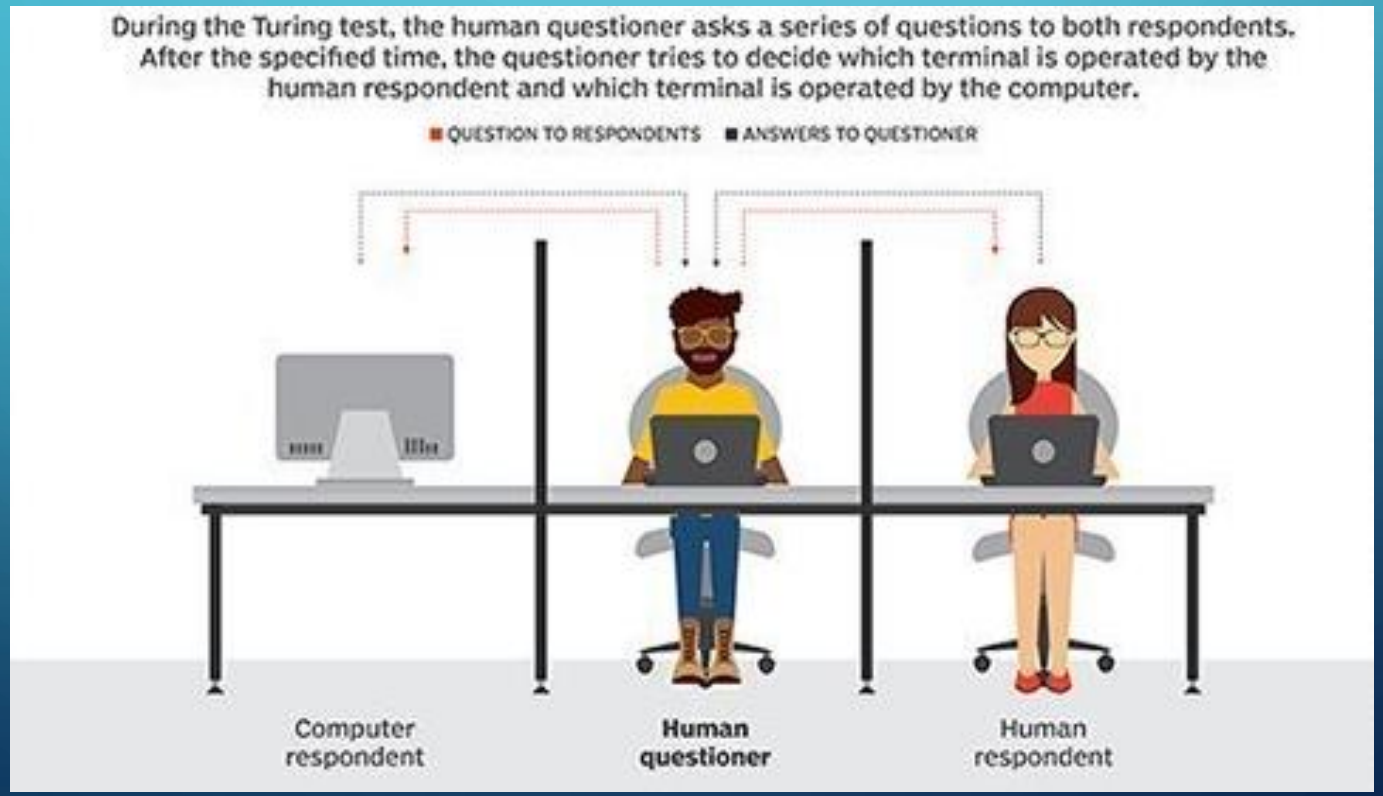
- The field of artificial intelligence was established at the Academic conference at Dartmouth College, USA
- Artificial Intelligence word was first created by John McCarthy in 1956:





1950 – TURING TEST

- A test of machine abilities by Alan Turing to see if they can think like humans.

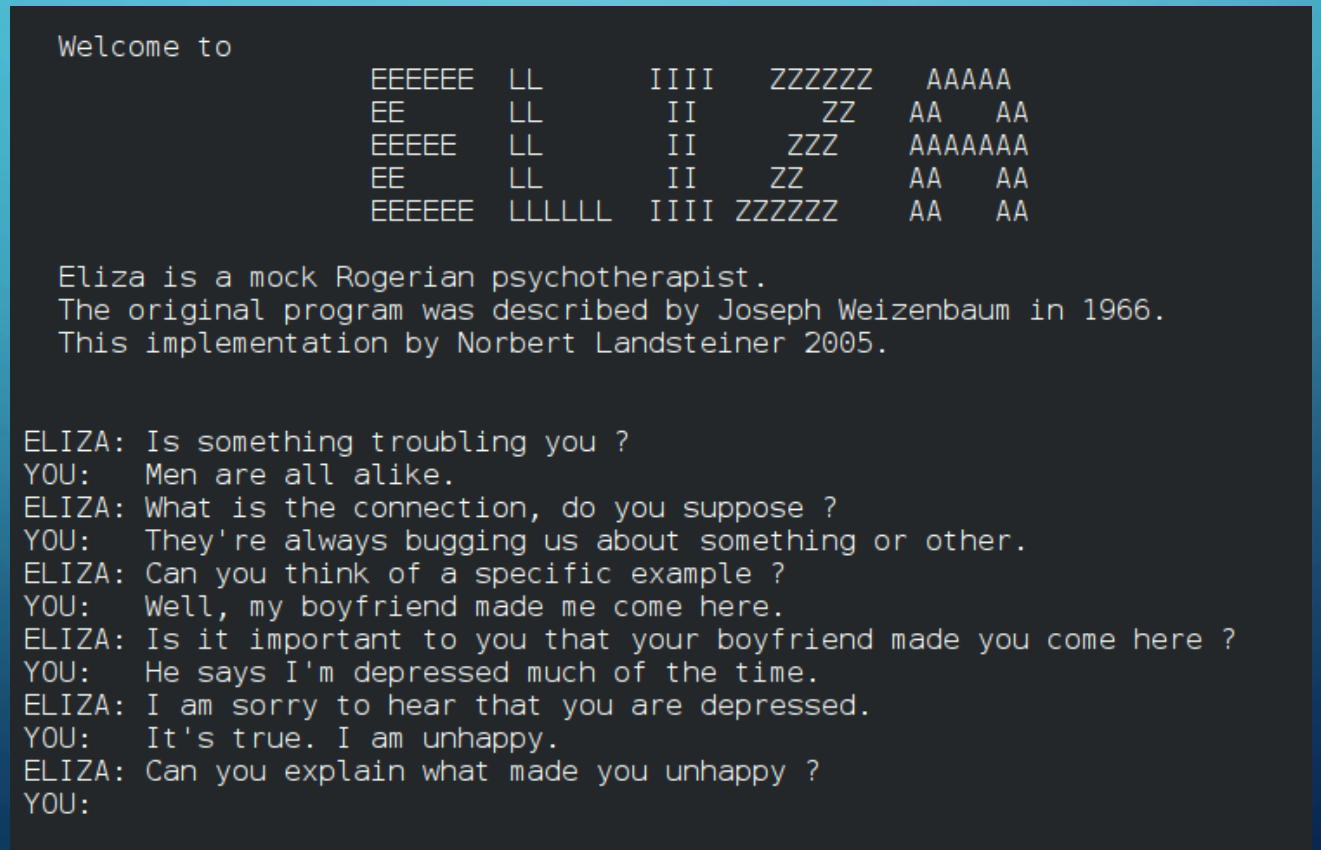


1961 - UNIMATE

- The first industrial robot to replace humans on the production line.

1964 - ELIZA

- Chatbots that can talk to humans

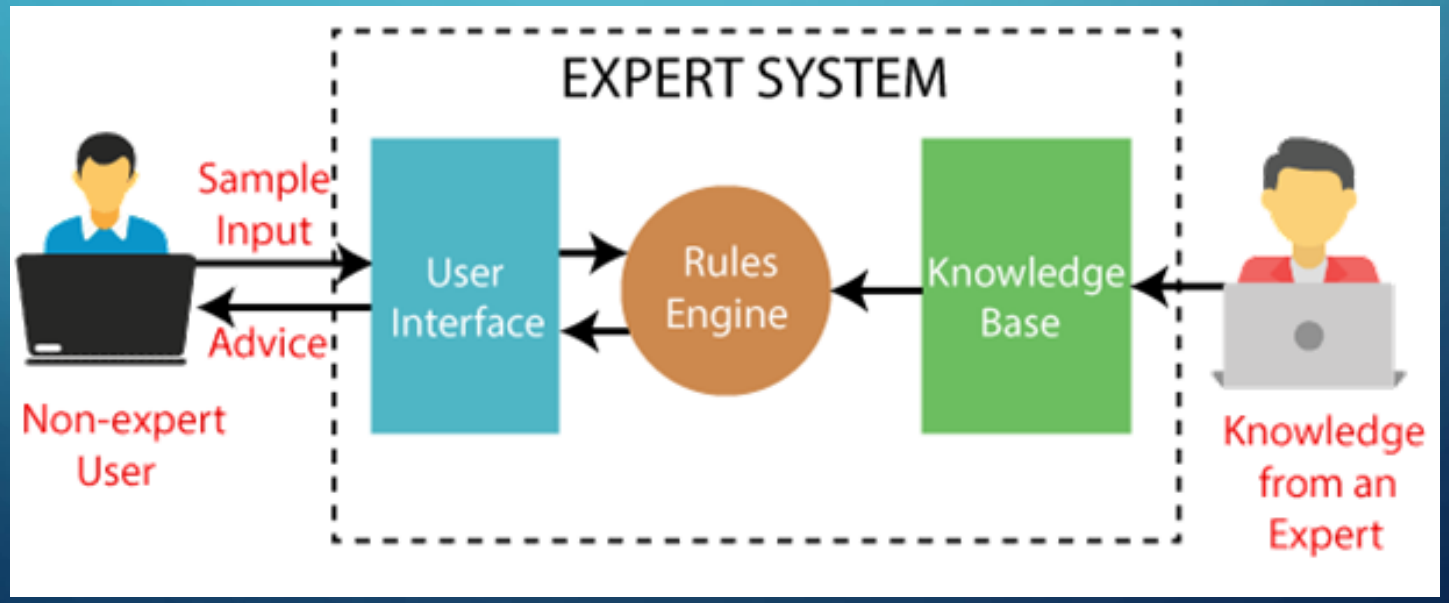


AI WINTER

- An AI winter is a period of reduced funding and interest in artificial intelligence research
- The field has experienced several hype cycles, followed by disappointment and criticism, followed by funding cuts, followed by renewed interest years or decades later
- There were two major winters in 1974–1980 and 1987–1993

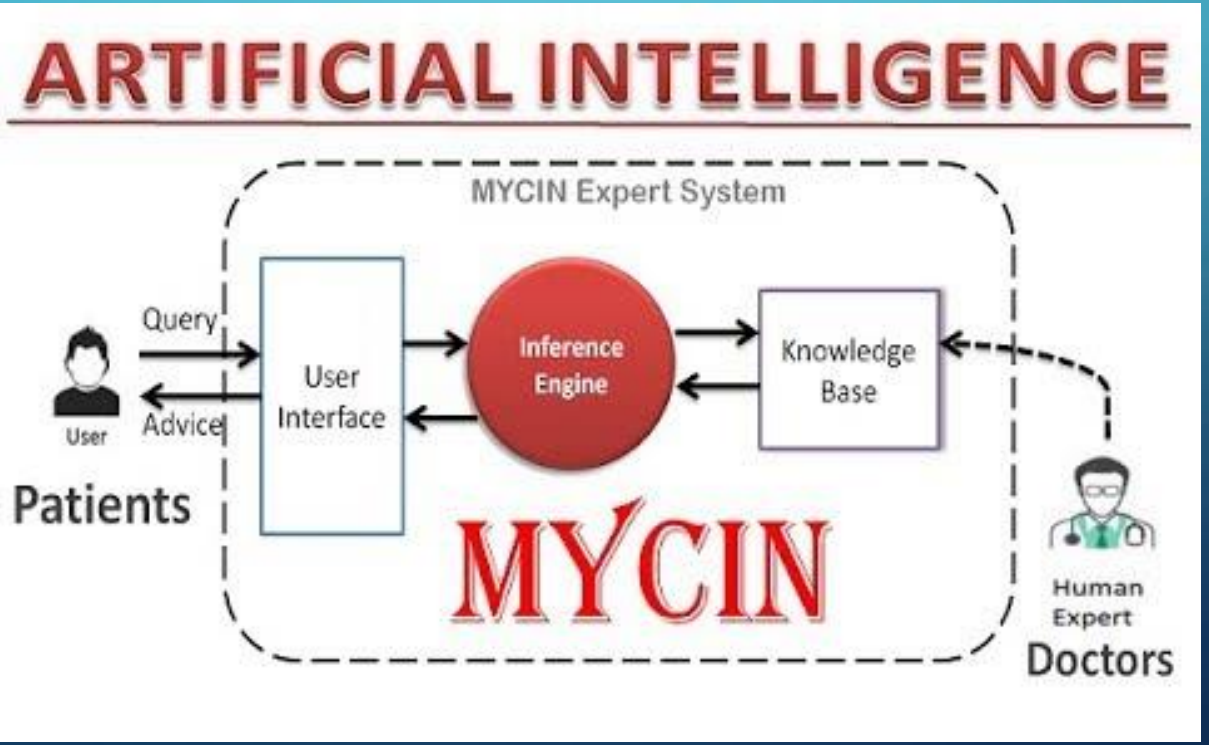
KNOWLEDGE BASED SYSTEM

- AI came back in the form of "expert systems" that store the knowledge of human experts in a database to use to solve problems or give advice rationally



1975 MYCIN

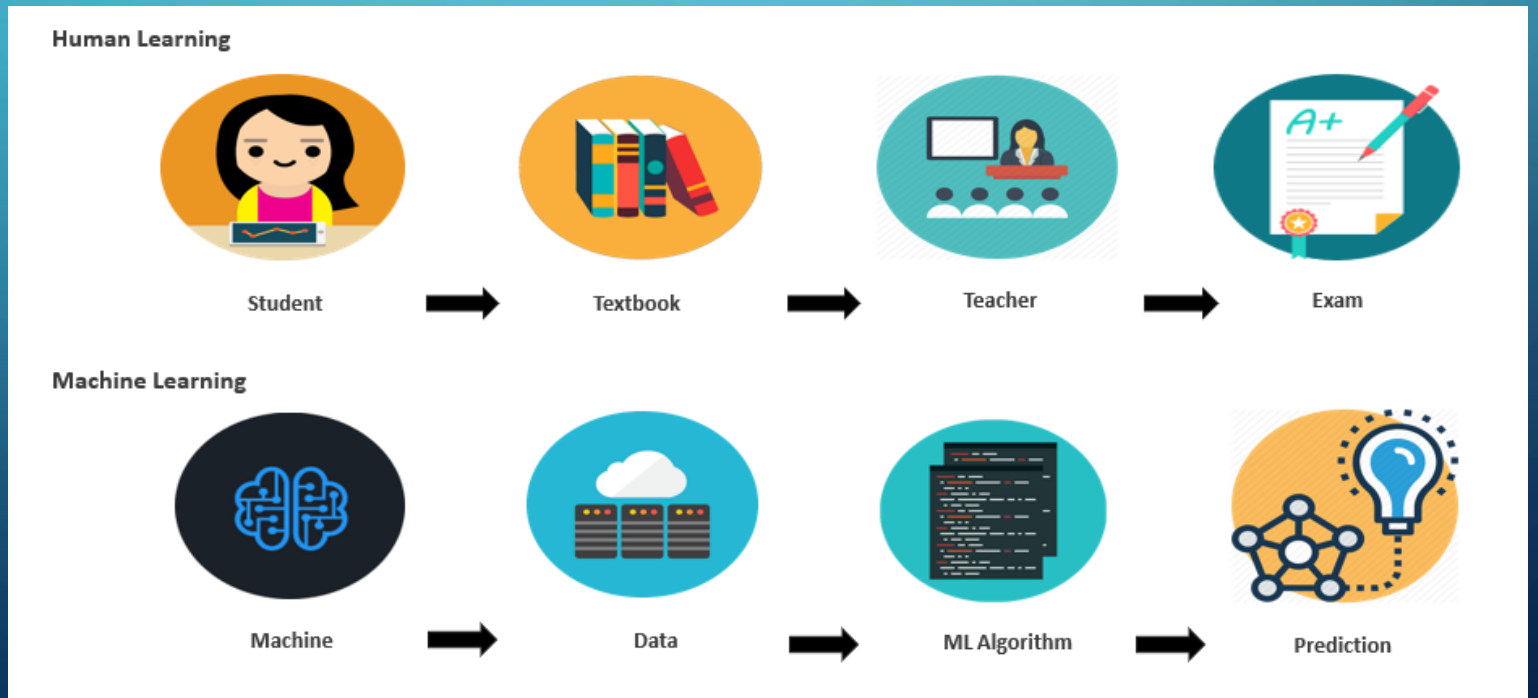
- It is an expert system used to diagnose the cause of infection. and recommend medication



WHAT IS MACHINE LEARNING?

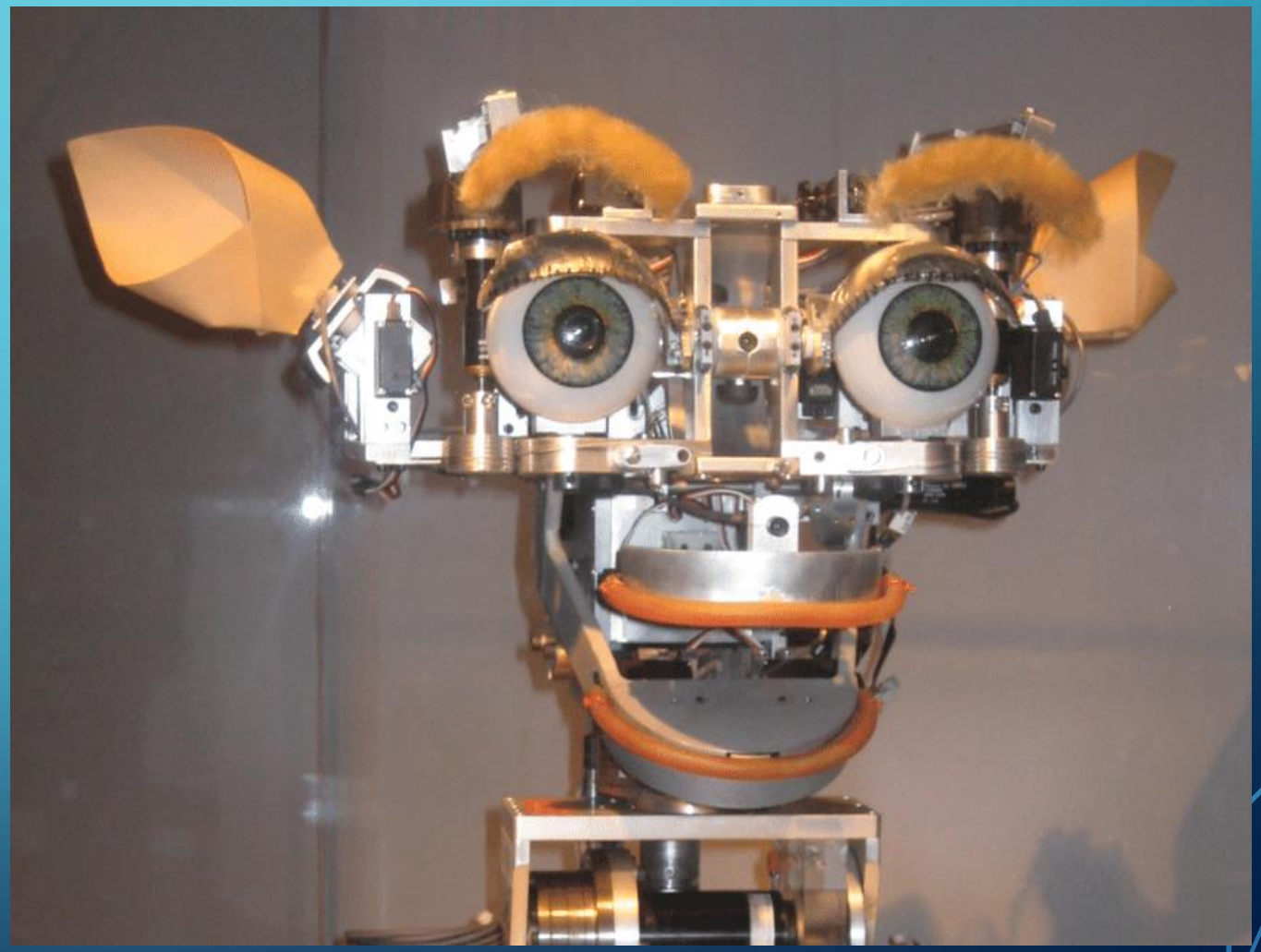
MACHINE LEARNING

- This gives machines the ability to learn from information just like humans, for example, chess players can learn and decide moves to defeat their opponents on their own.



1998 - KISMET

- A robot capable of detecting and responding to human needs.



1999 - AIBO

- A dog-like robot that can learn and act like a dog.

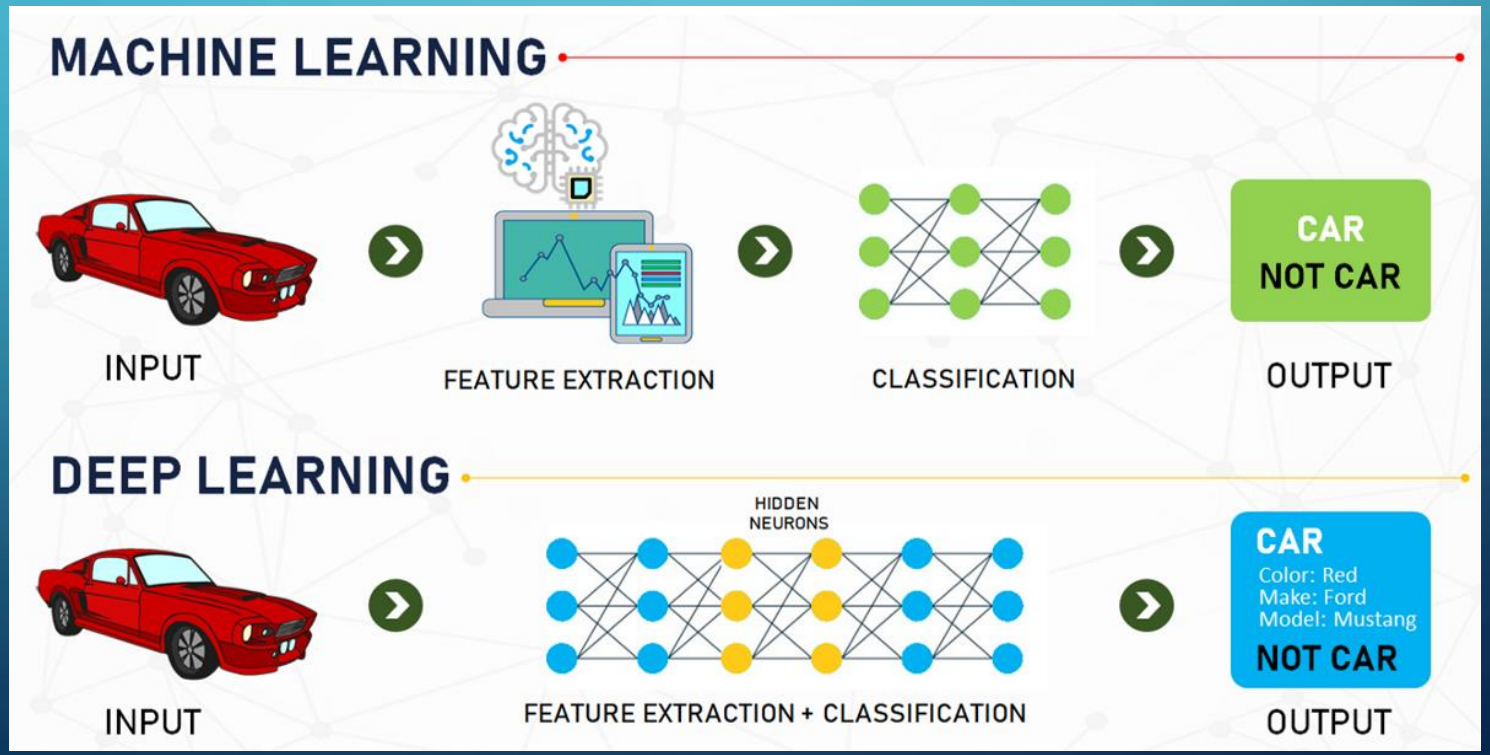
2002 - ROMBA

- Vacuum robot that decides the way in which it will clean the house

WHAT IS DEEP LEARNING?

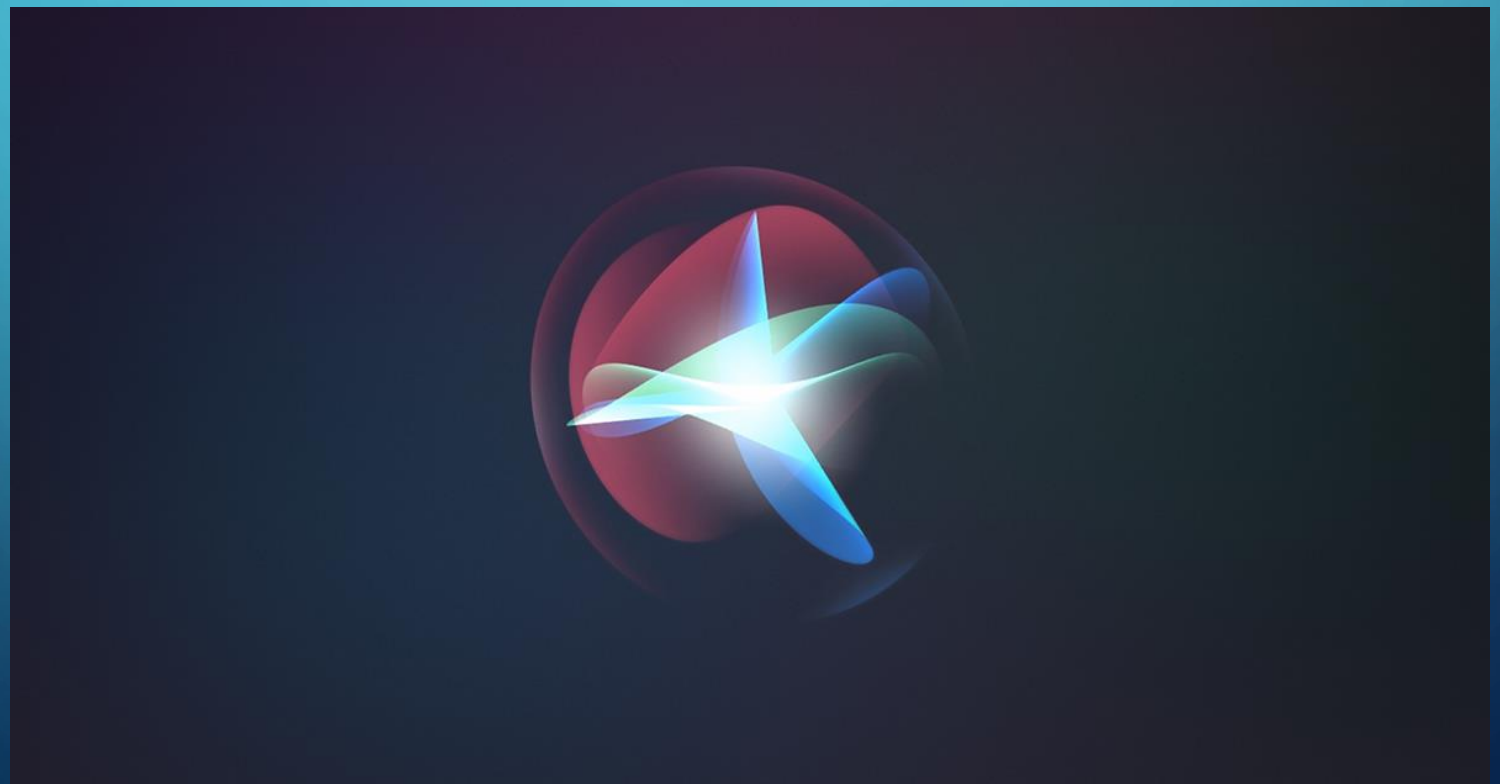
DEEP LEARNING

- Deep learning is a subset of machine learning where artificial neural networks, algorithms inspired by the human brain, learn from large amounts of data



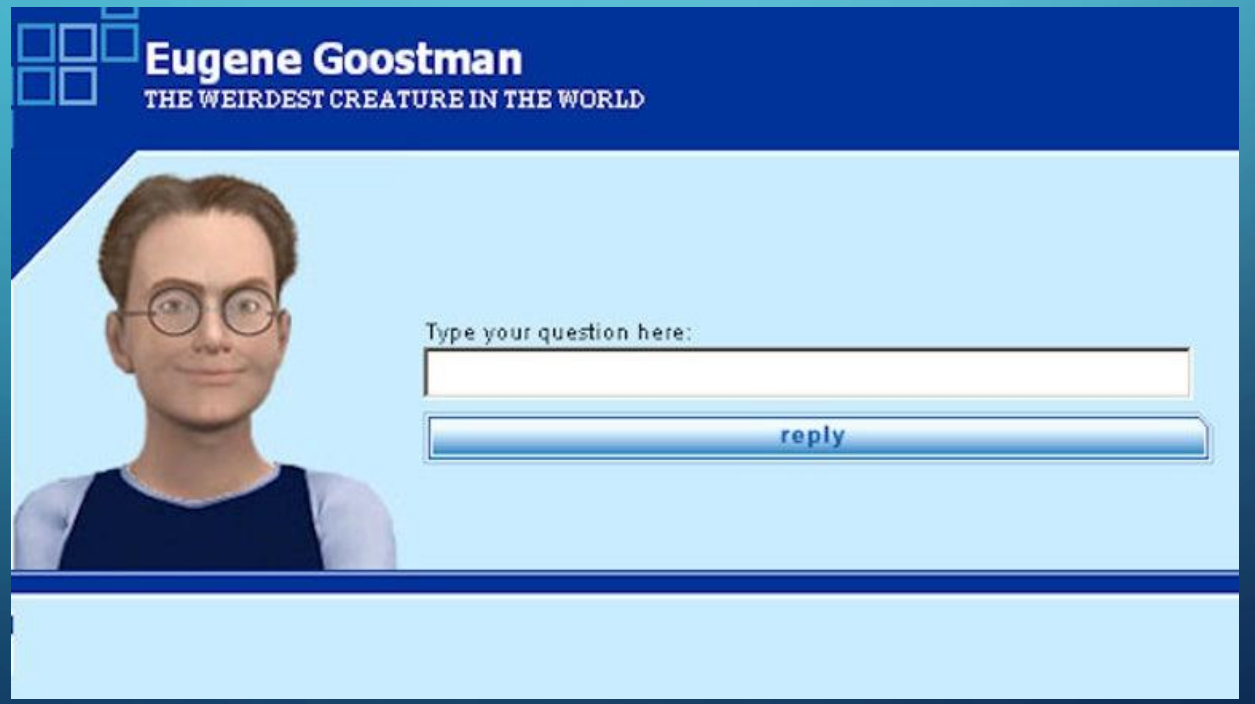
2010 - SIRI

- A smart assistant for multitasking



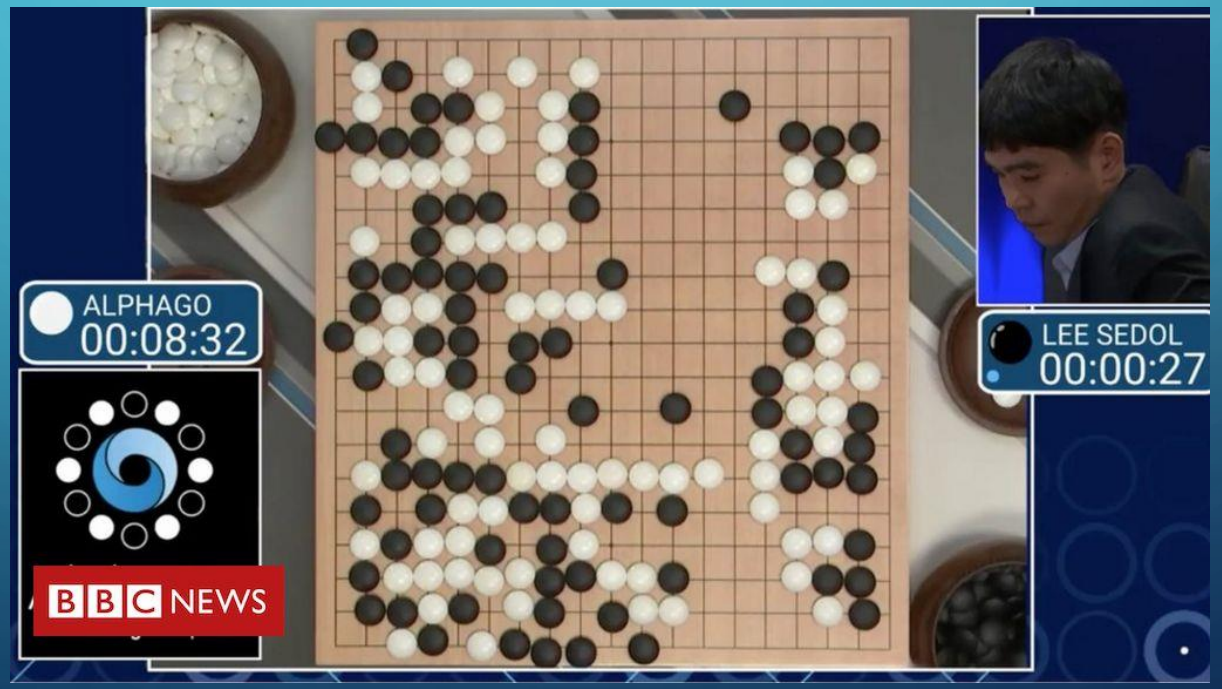
2014 - EUGENE

- Chat bots, one in three judges believe they are human



2017 – APLHA GO

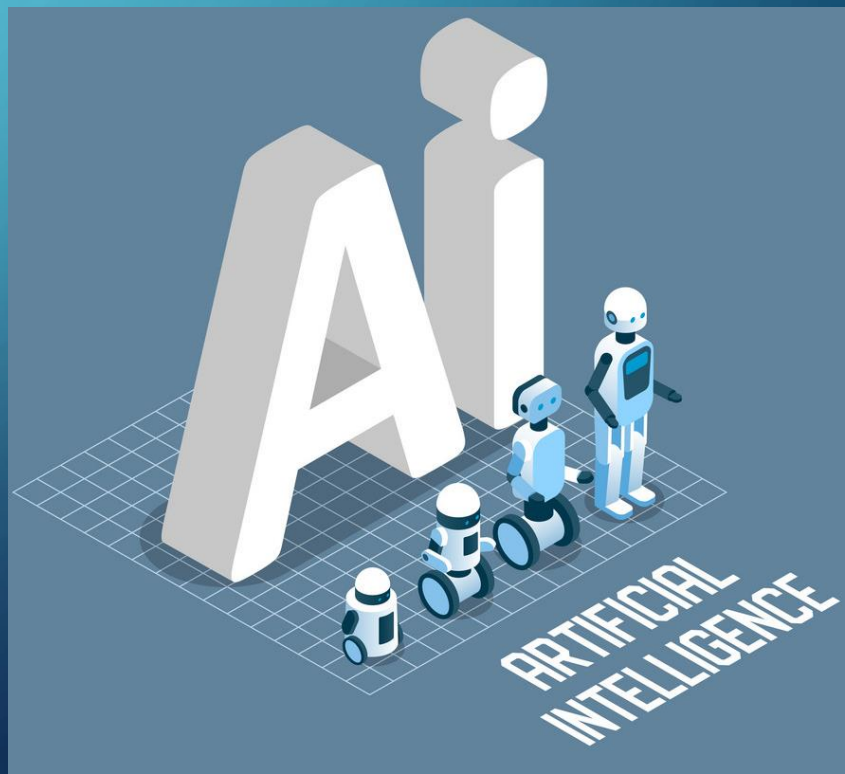
- The artificial intelligence that plays go chess and wins the world championship.



THE CONCEPT OF ARTIFICIAL INTELLIGENCE

THE CONCEPT OF ARTIFICIAL INTELLIGENCE

- Today, our life is related to AI in many ways because we use AI to help us both in work and in our daily life
- Therefore, learning the concepts of AI is important to provide us with a better understanding of artificial intelligence



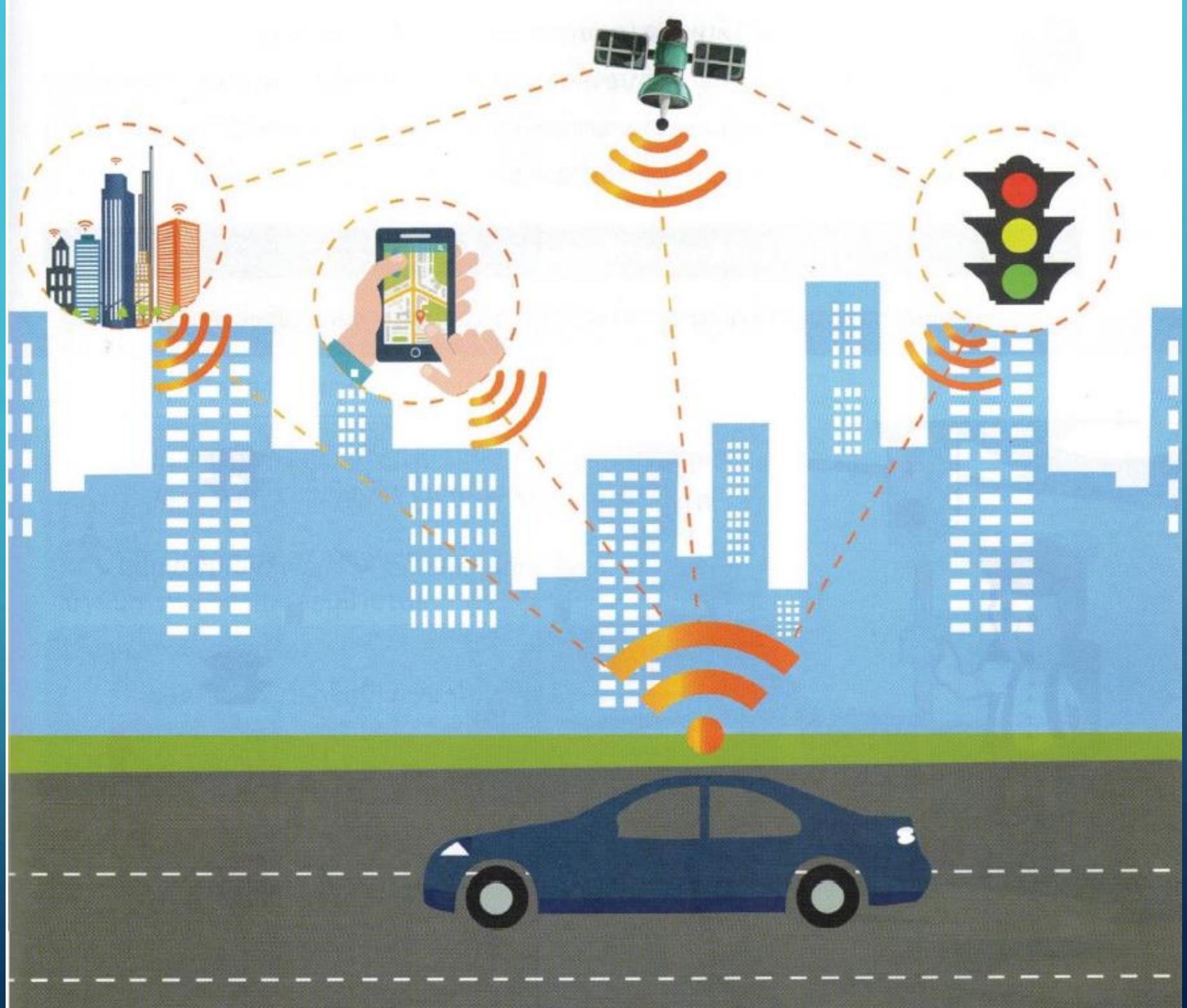

1
การรับรู้
(perception)
2
การแทนความรู้
และการให้เหตุผล
(representation
and reasoning)
3
การเรียนรู้
(learning)
4
การปฏิสัมพันธ์
อย่างเป็นธรรมชาติ
(natural interaction)
5
ผลกระทบทางสังคม
(social impact)
แนวคิด 5 ประการ
สำหรับปัญญาประดิษฐ์
(Five Big Ideas in AI)

1. PERCEPTION

- Computer vision and hearing are essential to the successful development of artificial intelligence
- AI is usually perceived by sight and hearing through devices that act as sensors such as cameras, microphones, or other input devices
- These devices will receive data for processing

1. PERCEPTION

- In addition to sensing through sensors, AI must also understand what it perceives, for example, the meaning of what it sees or what he heard



2. REPRESENTATION AND REASONING

- AI must be able to store data in the form of a data representation, such as decision-making rules built on expert knowledge and use this data representation to reason by inference, which is the process of drawing conclusions from existing data

EXAMPLE:

- If you have the knowledge of crossing the road at a crosswalk you can represent your knowledge with the following rules:

กฎ 1 ถ้า สัญญาณไฟคนข้ามเป็นสีเขียว และ การข้ามถนนปลอดภัย แล้ว ให้เดินข้ามถนน

กฎ 2 ถ้า สัญญาณไฟคนข้ามเป็นสีเขียว และ การข้ามถนนไม่ปลอดภัย แล้ว ให้หยุดรอ

กฎ 3 ถ้า สัญญาณไฟคนข้ามเป็นสีแดง แล้ว ให้หยุดรอ

กฎ 4 ถ้า มีรถกำลังวิ่งผ่านทางม้าลาย แล้ว การข้ามถนนไม่ปลอดภัย

กฎ 5 ถ้า ไม่มีรถกำลังวิ่งผ่านทางม้าลาย แล้ว การข้ามถนนปลอดภัย

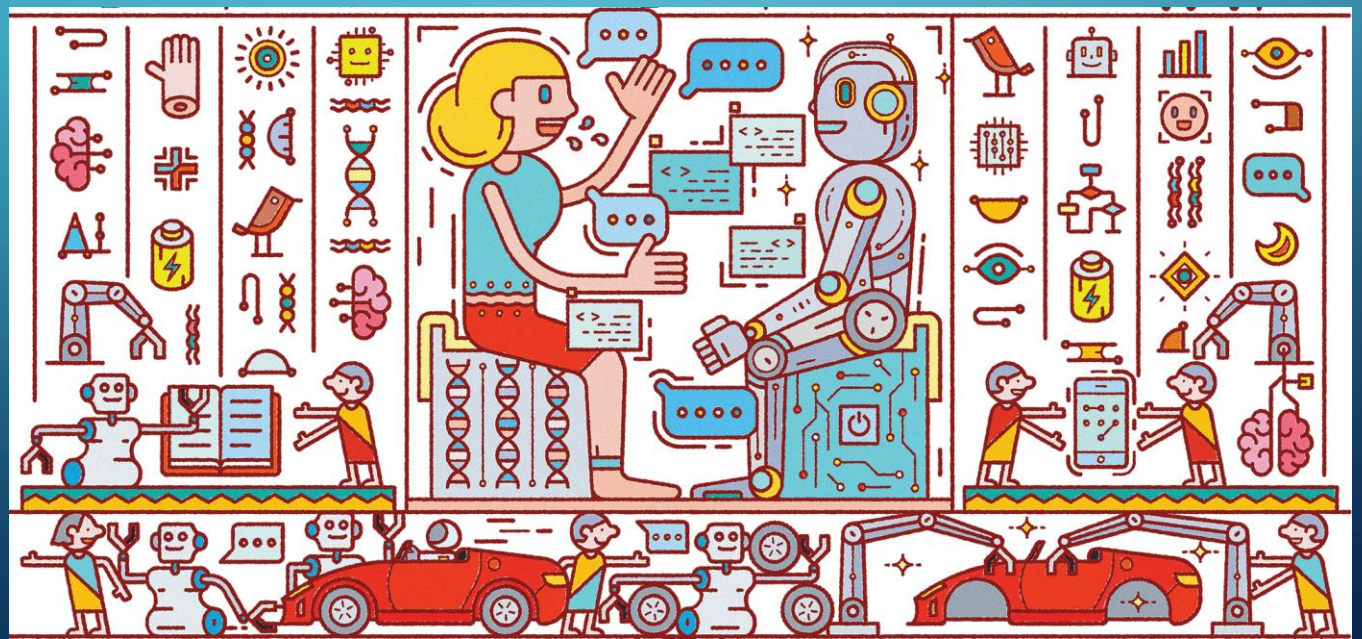
3. LEARNING

- AI must use machine learning algorithms to learn from big data by building a model from human-imported training data

Imported Data	Exported Data	Application
Email	Spam or non-spam	Email filter
Voice	Text	Speech recognition
English Sentences	Thai Sentences	Translator
Image of an item	Damaged condition	Visual inspection

4. NATURAL INTERACTION

- AI developers are trying to create artificial intelligence that can interact naturally with humans
- The artificial intelligence must first understand human-human interactions.



5. SOCIAL IMPACT

- Depending on its use, AI can be either beneficial or harmful to society
- The use of AI requires considerations of ethics, security and privacy as AI can make decisions or take actions that may affect humans
- Therefore, ethical rules for artificial intelligence must be strictly obeyed

ANY QUESTIONS?

WORKSHEET

THE END