

# **Machine intelligence**

## **INTRODUCTION TO ARTIFICIAL INTELLIGENCE (AI)**

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# OUTLINE

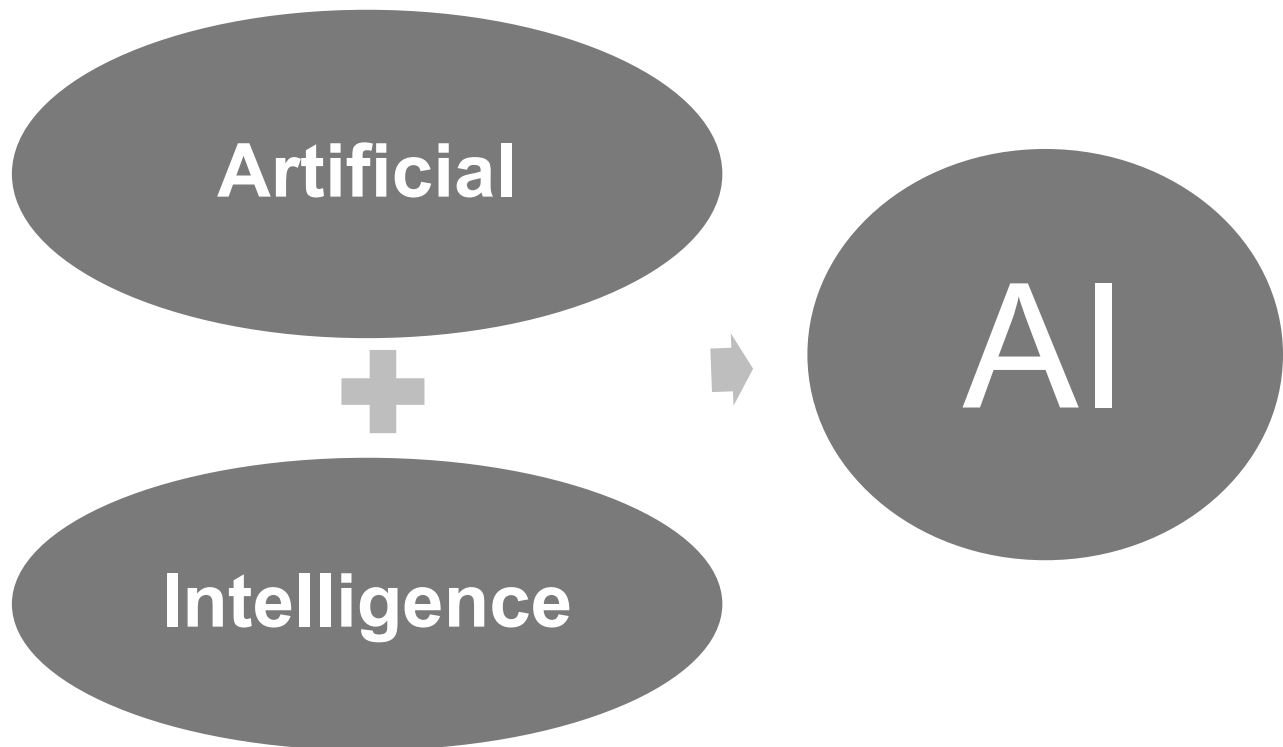
- **AI definition**
- **AI history**

# WHAT IS AI?

AI is made of two words:

**Artificial:** means unnatural.

**Intelligence:** the ability to learn and understand or to deal with new or trying situations.



# WHAT IS AI?

AI is an attempt to make machines smarter by learning from experiences, adapt to environmental changes and mimic human reasoning.

or

AI is the simulation of human intelligence processes by machines, usually computers.



# WHAT AI CAN ADD TO MACHINES

- **Reasoning (being logical/sensible):** a way to infer facts from existing data. It is a general process of thinking rationally, to find valid conclusions.
- **Learning:** the ability to acquire knowledge from data and/or interactions with the environment.
- **Problem solving:** the ability to employ learning to solve a wide range of tasks.
- **Perception:** the ability to understand from learning.
- **Decision making:** the ability to make informed decision based on the learning.

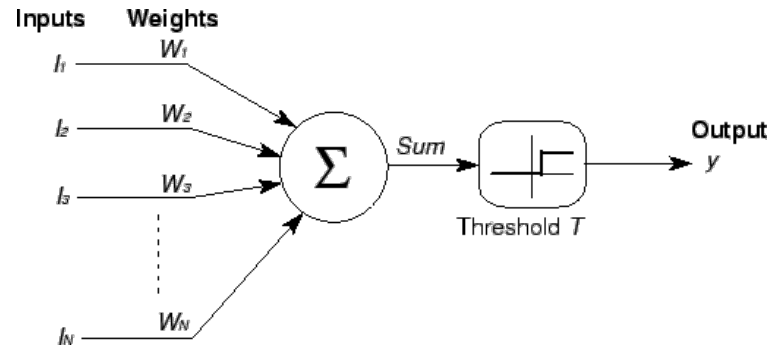


# HISTORY OF AI

## The birth of AI 1940-1960

1943

- Mc and Pitts Neuron Model.



1949

- Donald Hebb introduced Hebbian learning.

1950

- Turing test was introduced to examine machine intelligence.

1956

- AI term was introduced by John McCarthy during Darmouth conference.

# HISTORY OF AI

1960-1980

1966

- ELIZA world first chat bot was created by Joseph Weizenbaum.

1972

- First intelligent robot WABOT-1 was built in Japan.

1974-1980

- First AI winter. (no funding was given for research)



# HISTORY OF AI

1980-2002

1980

- Expert systems that emulated human's decision making were introduced..

1987  
-1993

- Second AI winter. (no research funding again).

1997

- IBM Deep blue computer beaten a world chess champion Gary Kasparov .

2002

- AI first entered homes with Roomba an AI powered vacuum robot.





# HISTORY OF AI

2006-2014

2006

- AI came into businesses such as Facebook, Amazon and Netflix.

2011

- IBM Watson won a jeopardy, quiz show. Understand natural language and solve complex problems.

2012

- Google Now a predictive phone app.

2014

- Chabot Eugene Goostman won a competition in the Turing test.



# HISTORY OF AI

2018- Now

2018

- The "Project Debater" by IBM debated on complex topics very well.

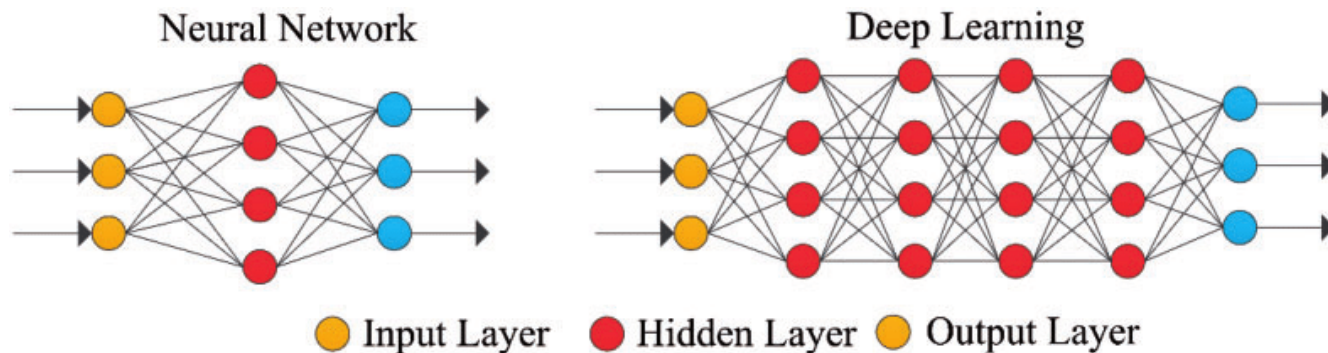
2018

- Google's "Duplex" a virtual assistant had taken hairdresser appointment on call, and lady on other side didn't notice that she was talking with the machine.

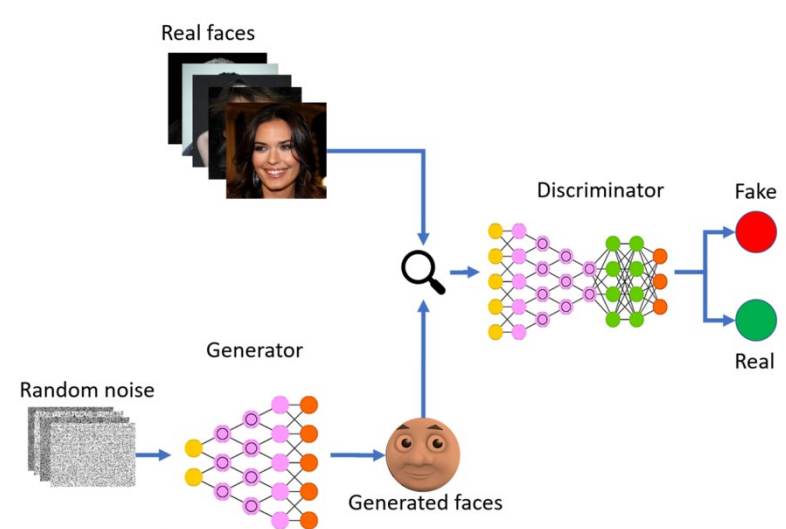


# TRENDING SINCE 2010

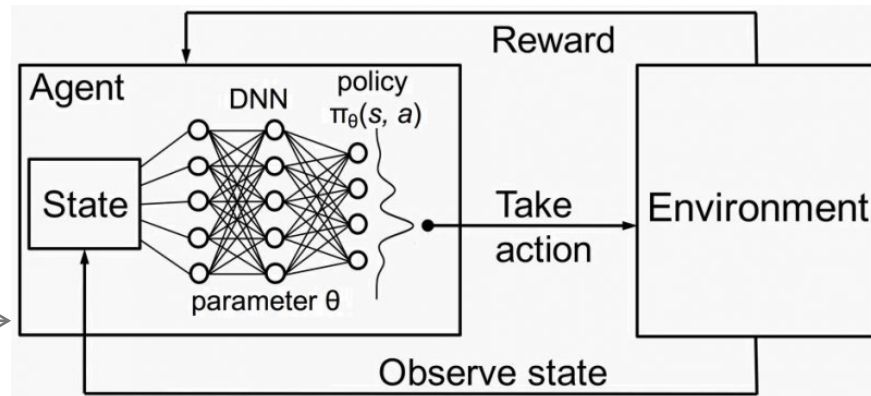
- Deep learning and big data.



- Generative adversarial models (GANs)

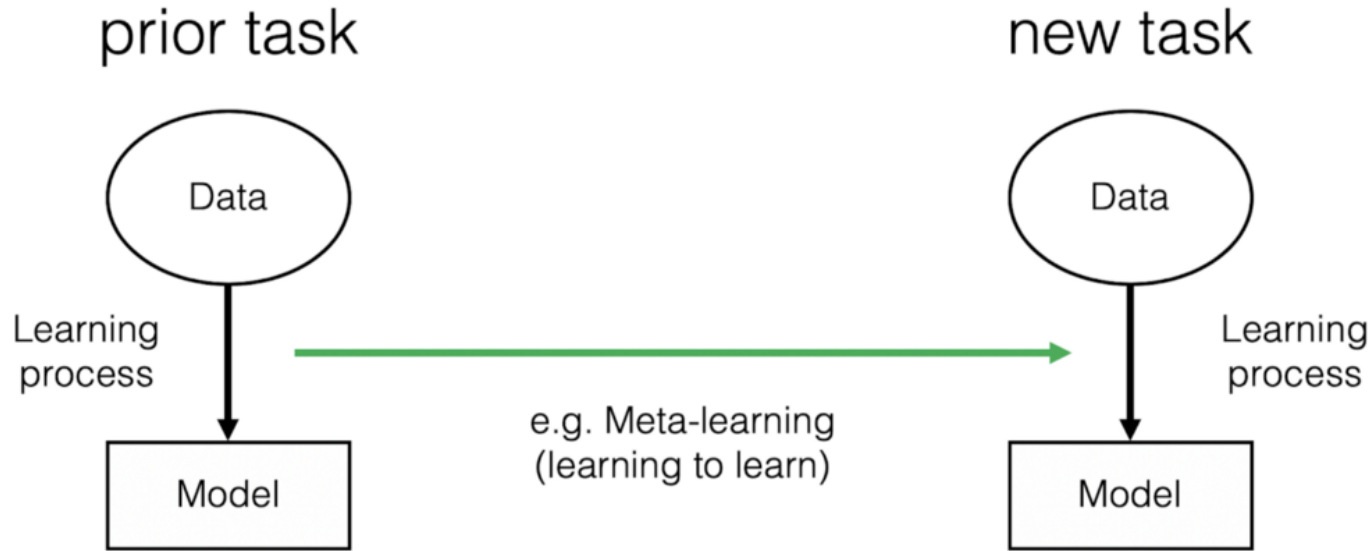


- Deep Reinforcement learning



# TRENDING SINCE 2010

- **Meta learning (learning to learn)**



## **Artificial general intelligence (AGI) :**

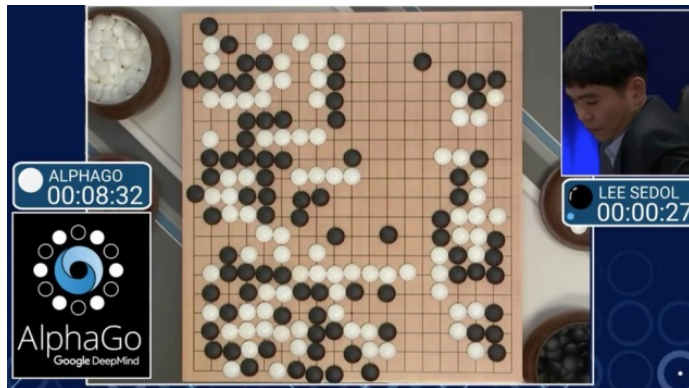
Human like AI or being able to learn like humans.

# AI PLATFORMS AND TOOLS

- Python-based packages and platforms such as Tensorflow, Pytorch, Conda and Keras.



- Google DeepMind and Alpha Go.



# CONCLUSIONS

- **AI is the ability of the machine to think, learn, solve problems, and make decisions.**
- **AI was born in the 1940s-1950s.**
- **Turing Test, First Neuron Math Model McCulloch and Pitts Neuron Model and First Supercomputer.**
- **AI initial theories was established in the 1960s**
- **Robotics; Fuzzy Logic Theory; ANN / Backpropagation Algorithm.**
- **AI went through two winters in the 1970s and in the 1980s**
- **No Breakthroughs; Financial Difficulties**

# CONCLUSIONS

**AI interest and research was active in the 1980s**

- **Personal Computers; Fuzzy Systems; ANN development**

**AI developments in the 1990s included**

- **Smart Weapons; Internet; Deep Blue**

**AI developments in the 2000s included**

- **Facebook; Amazon; Google**

**AI new trends in the 2010s include**

- **Deep Learning; Big Data; Python; General A.I.**

# VIDEOS

- **AI**

<https://www.youtube.com/watch?v=fvtrRGmv7aU&list=PLrFsz7ebp6wunF6BSEnxO3gtRfP4Z8ChI&index=3>

- **AI history**

<https://www.youtube.com/watch?v=056v4OxKwll&list=PLrFsz7ebp6wunF6BSEnxO3gtRfP4Z8ChI&index=5>