Pengenalan Kecerdasan Buatan

Artificial Intelligence, TECHIE PROPHETS https://www.coursehero.com/file/45166681/AIpdf/

ARTIFICIAL

INTELLIGENCE

ARTIFICIAL INTELLIGENCE

- Intelligence: "The capacity to learn and solve problems"
- Artificial Intelligence: Artificial intelligence (AI) is the simulation of human intelligence by machines.
  - The ability to solve problems
  - The ability to act rationally
  - The ability to act like humans

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What is Intelligence?

- Definition (Merriam Webster):
  - Capacity for learning, reasoning, understanding and similar forms of mental activity
  - Aptitude in grasping truths, relationships, facts, meanings
- Reasoning:
  - Process of forming conclusions, judgments, inferences from facts
- Understanding:
  - Ability to get the meaning of and judge, to know and comprehend
- Comprehension:
  - Act of grasping with intellect, capacity for understanding fully

Artificial Intelligence Definitions

- Artificial intelligence is a field of computer science that provides the ability for a computer to learn and reason like humans using several available techniques.
- It is an important field for those who want to extract meaningful insights from massive amounts of data in a timely and systematic manner.

https://www.h2o.ai/community/top-links/glossary/history?GlossaryKey=9fd283e9-df6b-4588-a0c7-8fecf2443331

AI Definitions

- The study of how to make programs/computers do things that people do better
- The study of how to make computers solve problems which require knowledge and intelligence
- The exciting new effort to make computers think … machines with minds
- The automation of activities that we associate with human thinking (e.g., decision-making, learning…)
- The art of creating machines that perform functions that require intelligence when performed by people
- The study of mental faculties through the use of computational models
- A field of study that seeks to explain and emulate intelligent behavior in terms of computational processes
- The branch of computer science that is concerned with the automation of intelligent behavior

Thinking machines or machine intelligence

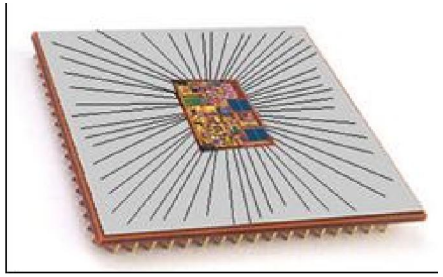
Studying cognitive faculties

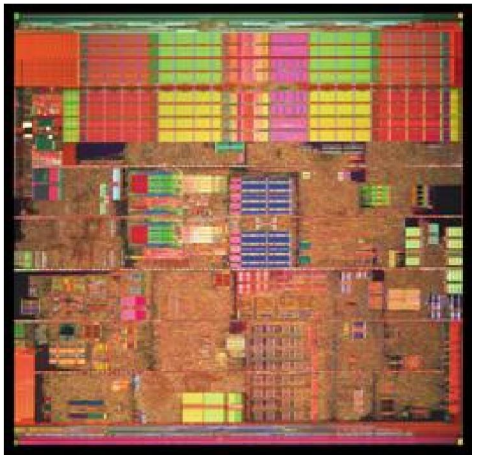
Problem Solving and CS

AI definitions, Derrick Beasley , https://slideplayer.com/slide/6829974/

Brain vs. Computer

- In AI, we compare the brain (or the mind) and the computer
  - Our hope: the brain is a *form* of computer
  - Our goal: we can *create* computer intelligence through programming just as people become intelligent by learning

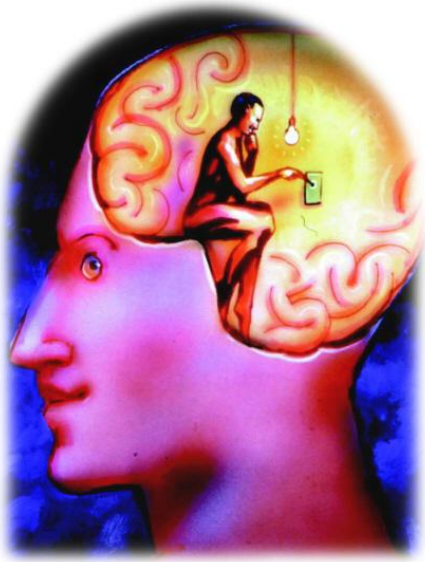




But we see that the computer is not like the brain

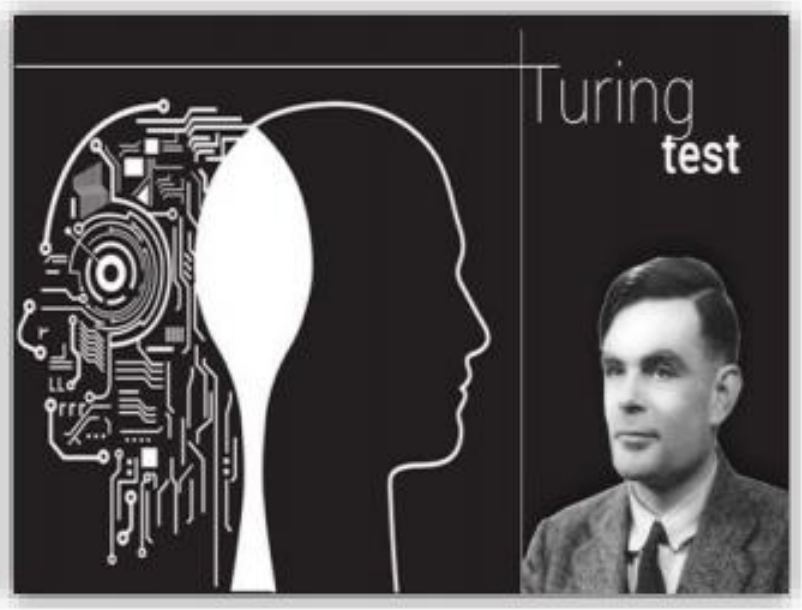
The computer performs tasks without understanding what its doing

Does the brain understand what its doing when it solves problems?

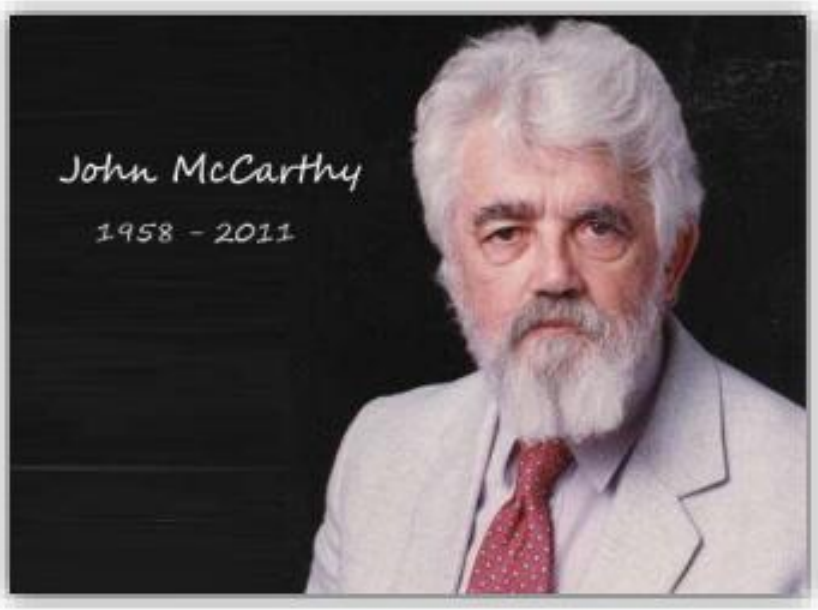


AI definitions, Derrick Beasley , https://slideplayer.com/slide/6829974/

EARLY HISTORY OF A.I.



1950 : "CAN MACHINES THINK??????"



1956 : THE TERM "ARTIFICIAL INTELLIGENCE" WAS FIRST INTRODUCED.

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So What Does AI Do?

- Most AI research has fallen into one of two categories
  - Select a specific problem to solve
    - study the problem (perhaps how humans solve it)
    - come up with the proper representation for any knowledge needed to solve the problem
    - acquire and codify that knowledge
    - build a problem solving system
  - Select a category of problem or cognitive activity (e.g., learning, natural language understanding)
    - theorize a way to solve the given problem
    - build systems based on the model behind your theory as experiments
    - modify as needed
- Both approaches require
  - one or more representational forms for the knowledge
  - some way to select proper knowledge, that is, search

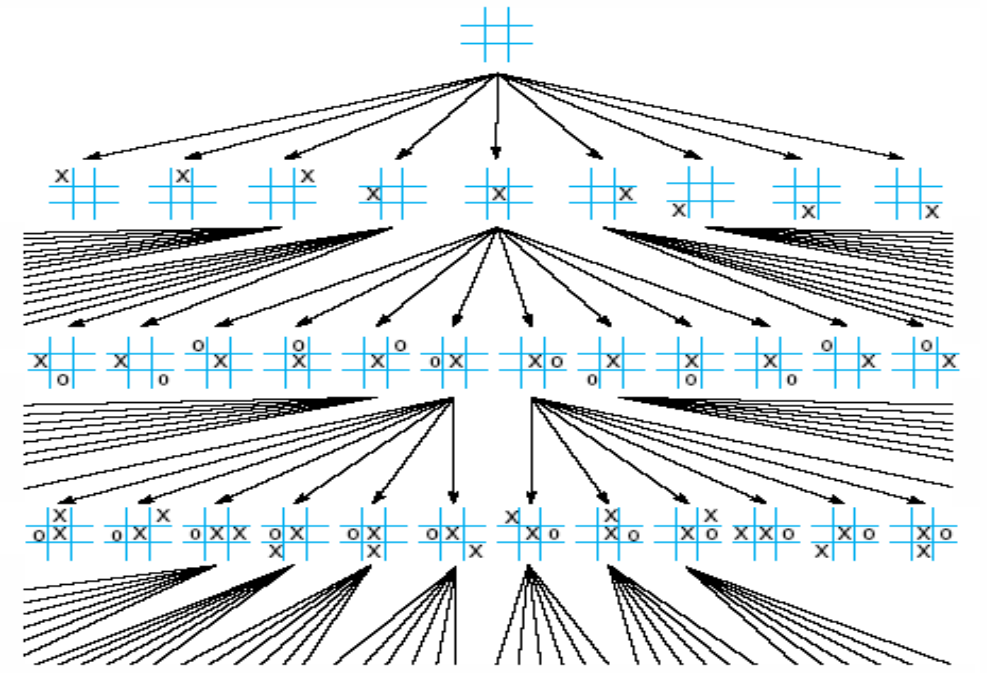
AI definitions, Derrick Beasley , https://slideplayer.com/slide/6829974/

What is Search?

- We define the state of the problem being solved as the values of the active variables
  - this will include any partial solutions, previous conclusions, user answers to questions, etc

- while humans are often able to make intuitive leaps, or recall solutions with little thought, the computer must search through various combinations to find a solution

- To the right is a search space for a tic-tac-toe game



AI definitions, Derrick Beasley , https://slideplayer.com/slide/6829974/

Search Spaces and Types of Search

- The search space consists of all possible states of the problem as it is being solved
  - A search space is often viewed as a tree and can very well consist of an exponential number of nodes making the search process intractable
  - Search spaces might be pre-enumerated or generated during the search process
  - Some search algorithms may search the entire space until a solution is found, others will only search parts of the space, possibly selecting where to search through a heuristic
- Search spaces include
  - Game trees like the tic-tac-toe game
  - Decision trees (see next slides)
  - Combinations of rules to select in a production system
  - Networks of various forms (see next slides)
  - Other types of spaces

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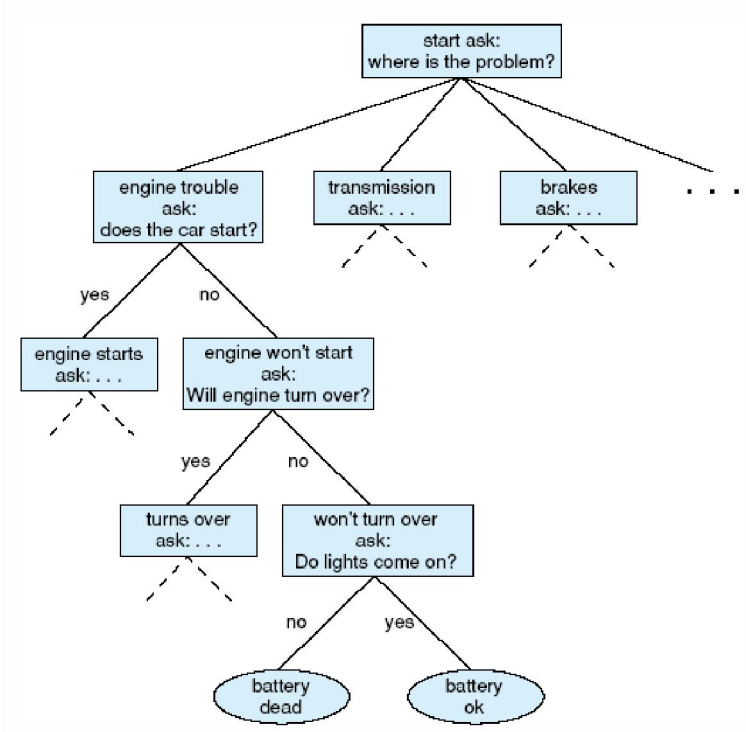

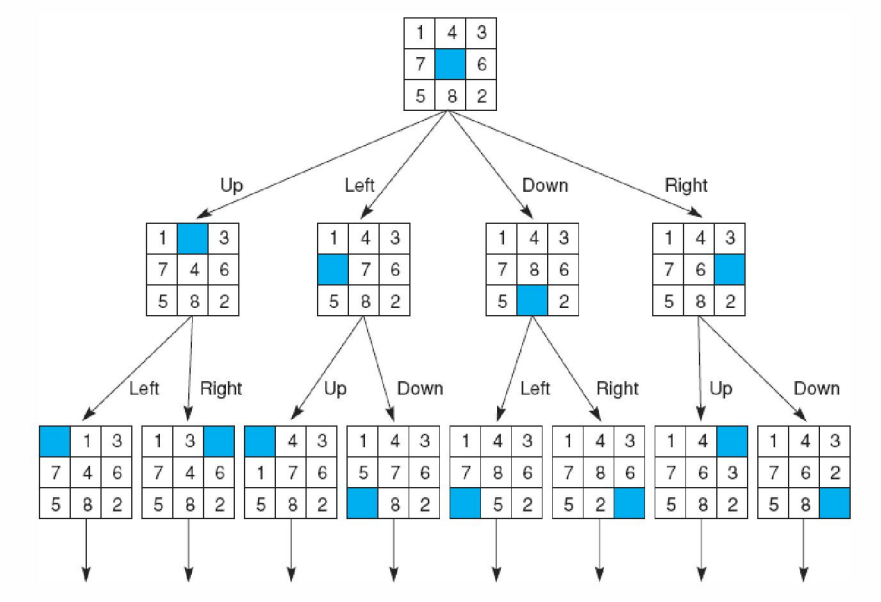

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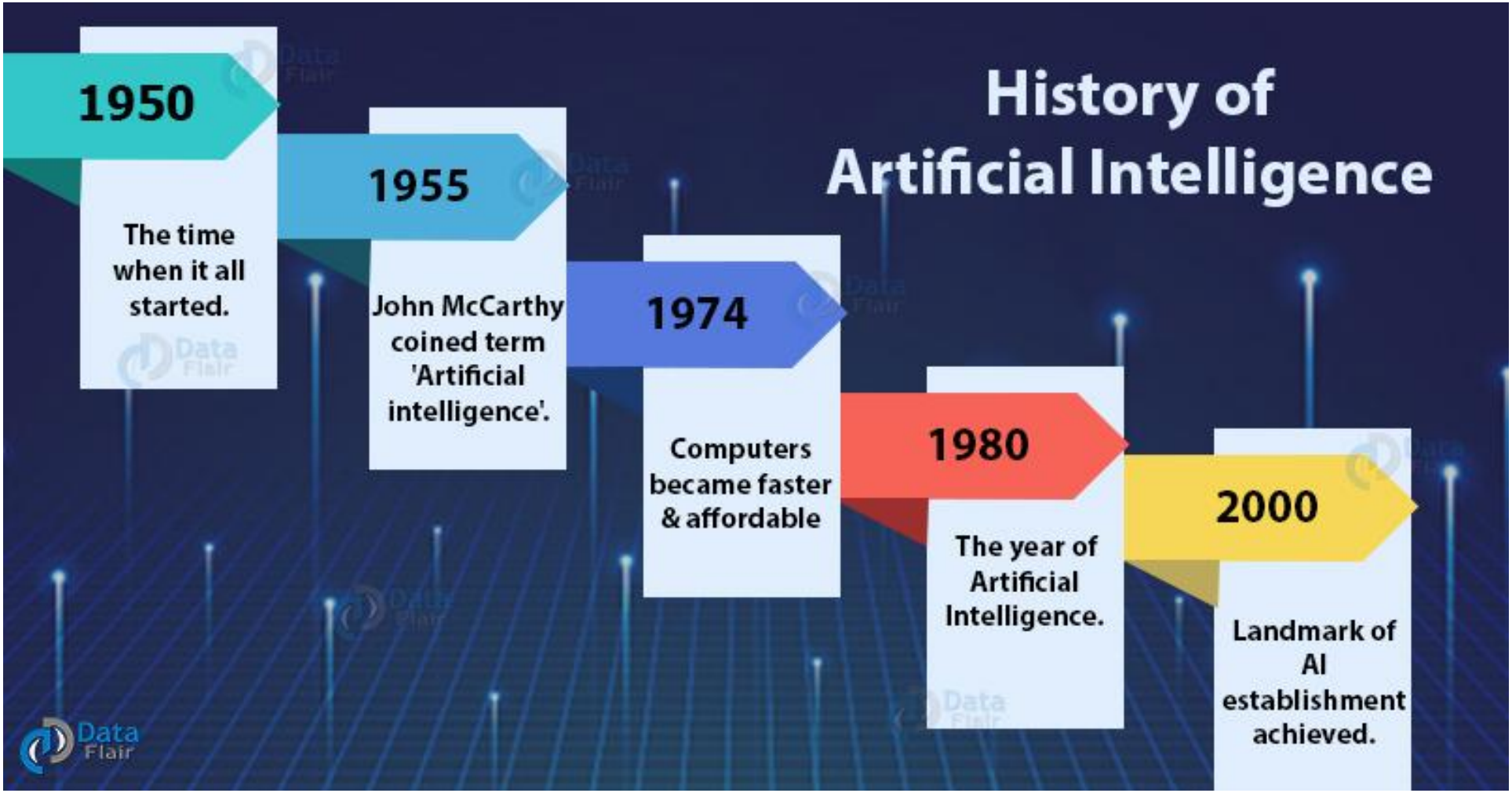
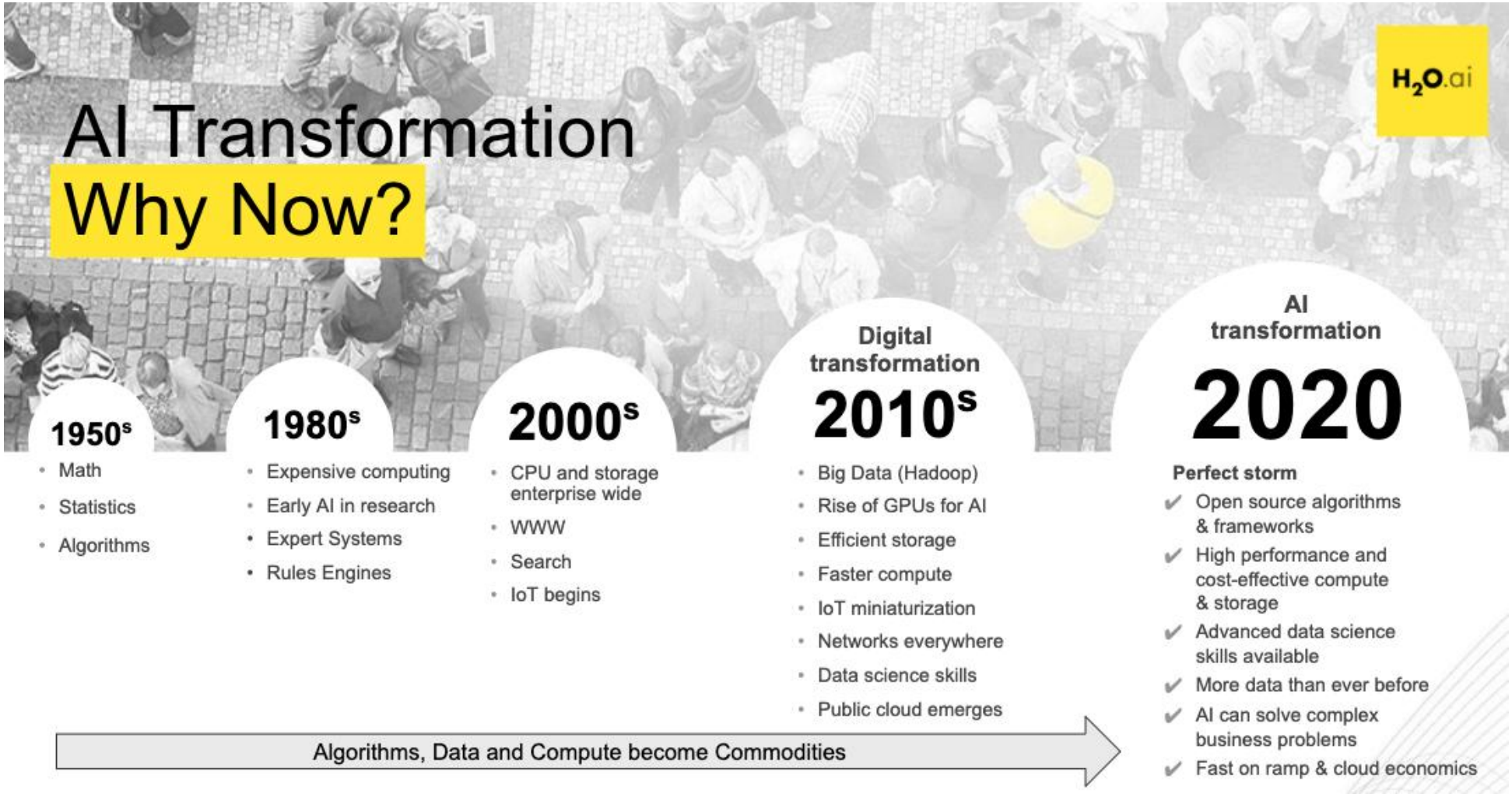


https://data-flair.training/blogs/history-of-artificial-intelligence/

- John McCarthy who is known as the founder of Artificial Intelligence introduced the term ‘Artificial Intelligence’ in the year 1955.
- McCarthy along with Alan Turing, Allen Newell, Herbert A. Simon, and Marvin Minsky is known as the founding fathers of AI.
- Alan suggested that if humans use available information, as well as reason, to solve problems to make decisions – then why can’t it be done with the help of machines?



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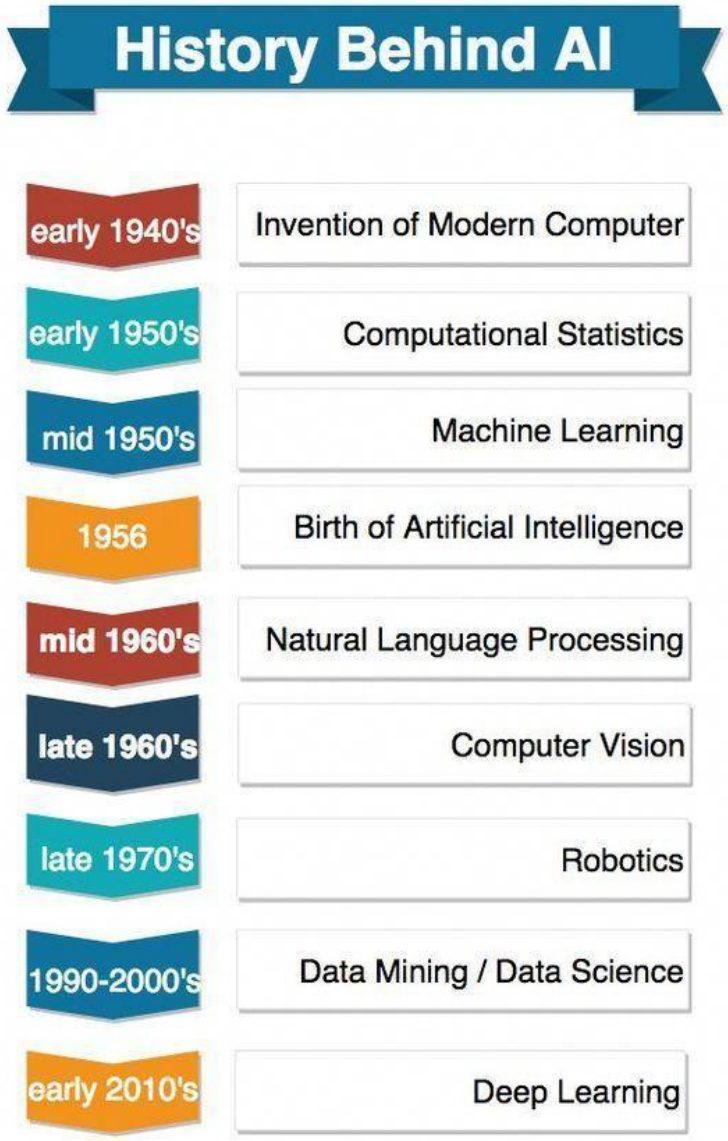
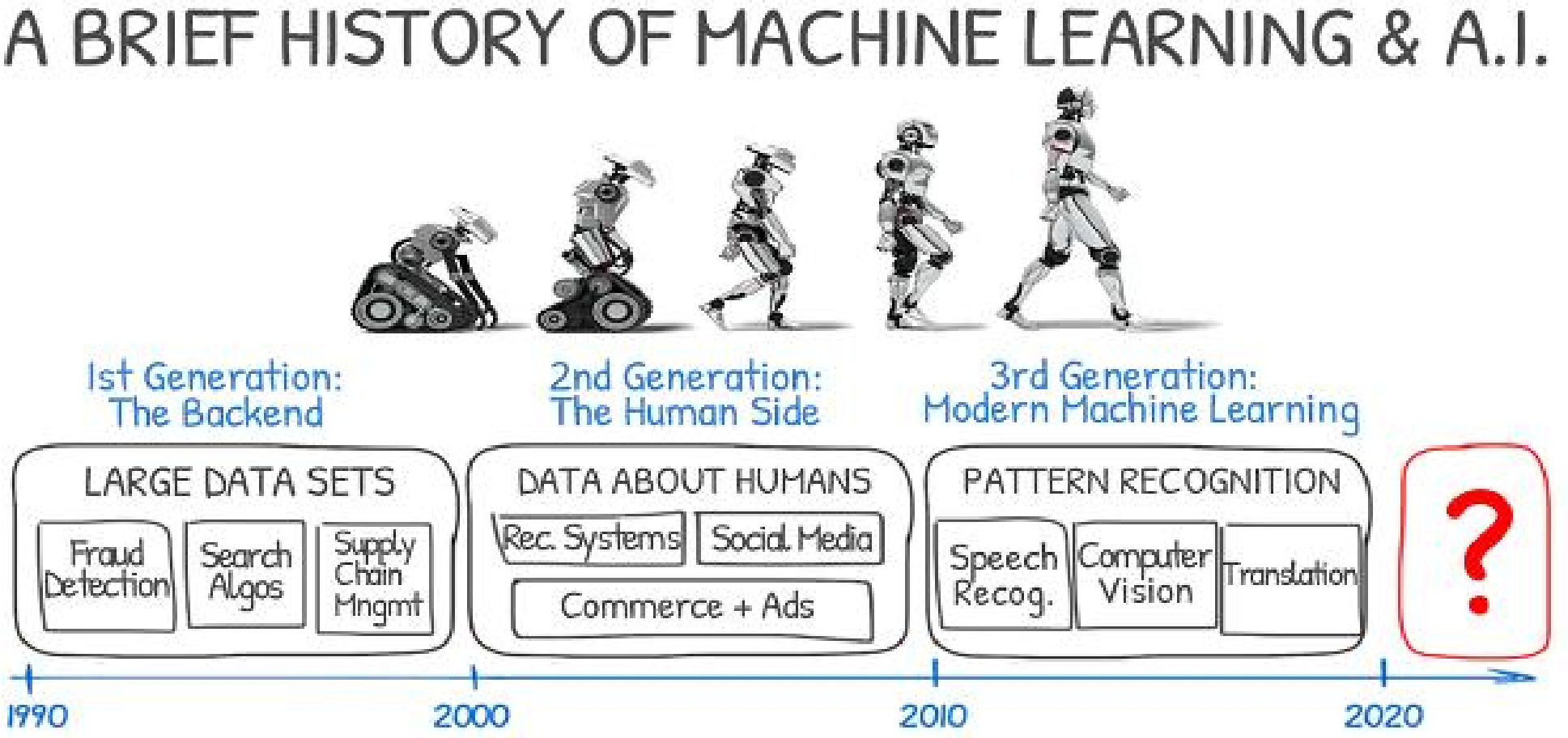
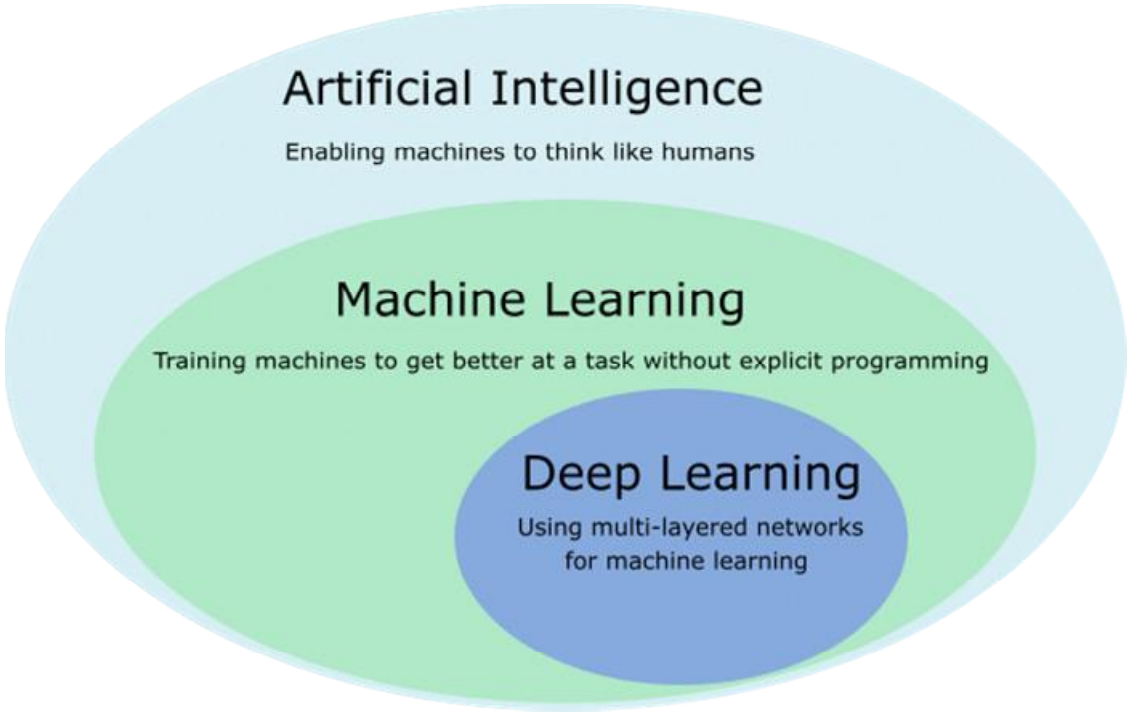
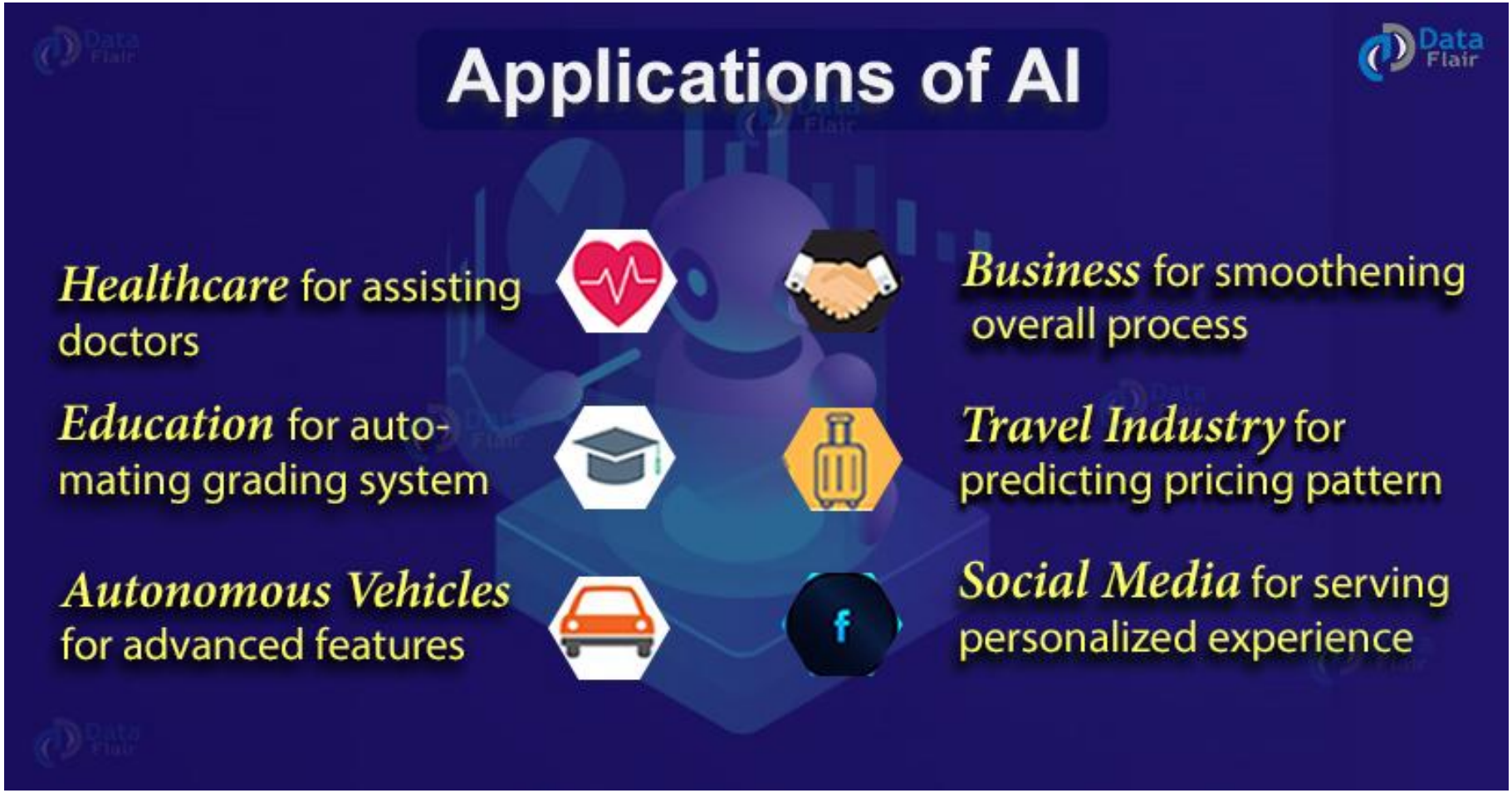

History Behind AI
early 1940's
Invention of Modern Computer
early 1950's
Computational Statistics
mid 1950's
Machine Learning
1956
Birth of Artificial Intelligence
mid 1960's
Natural Language Processing
late 1960's
Computer Vision
late 1970's
Robotics
1990-2000's
Data Mining / Data Science
early 2010's
Deep Learning

According to Michael I. Jordan, professor at the University of California, Berkeley AI lab.

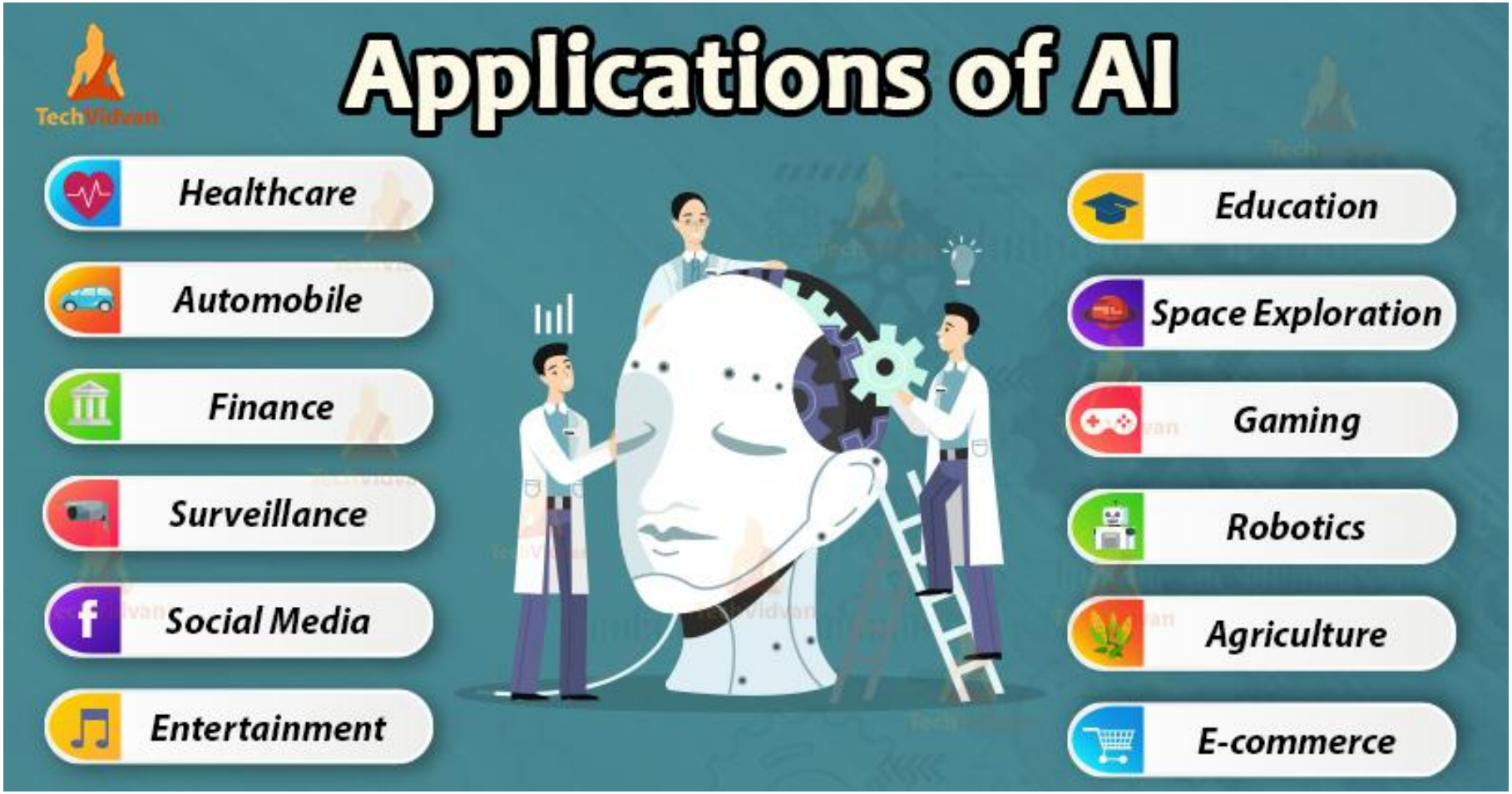




https://www.7wdata.be/big-data/ai-vs-machine-learning-vs-deep-learning/



https://data-flair.training/blogs/applications-of-artificial-intelligence/



https://techvidvan.com/tutorials/artificial-intelligence-applications/

CURRENT STATUS OF A.I.

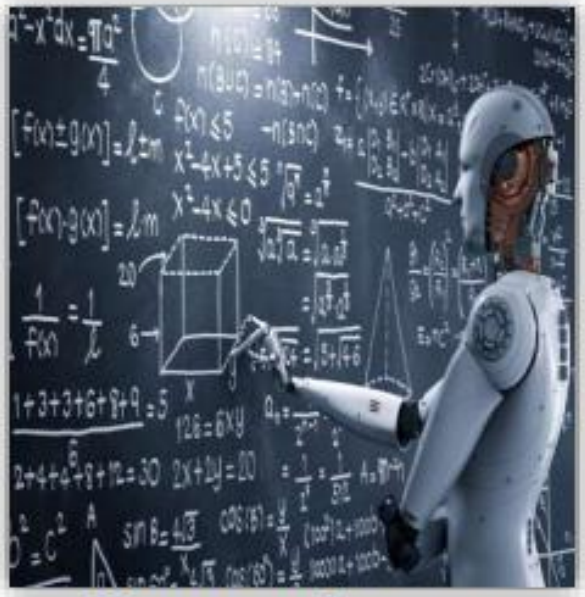
A.I. FOR GOOD

- Analyse Satellite Images to identify which areas have the highest poverty level

AVIATION

- Gate allocation for plane while landing
- Ticket price determination

EDUCATION



- Companies are creating robots to teach subjects

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CURRENT STATUS OF A.I.

HEALTHCARE

- Solving a variety of problems of patients, hospitals & healthcare industry overall.
- Using Avatars in place of patients.

HEAVY INDUSTRY

- Robots have become very common in many industries
- Can do repetitive laborious tasks

FINANCE

- Algorithmic Trading
- Market analysis & data mining
- Personal Finance
- Portfolio management

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