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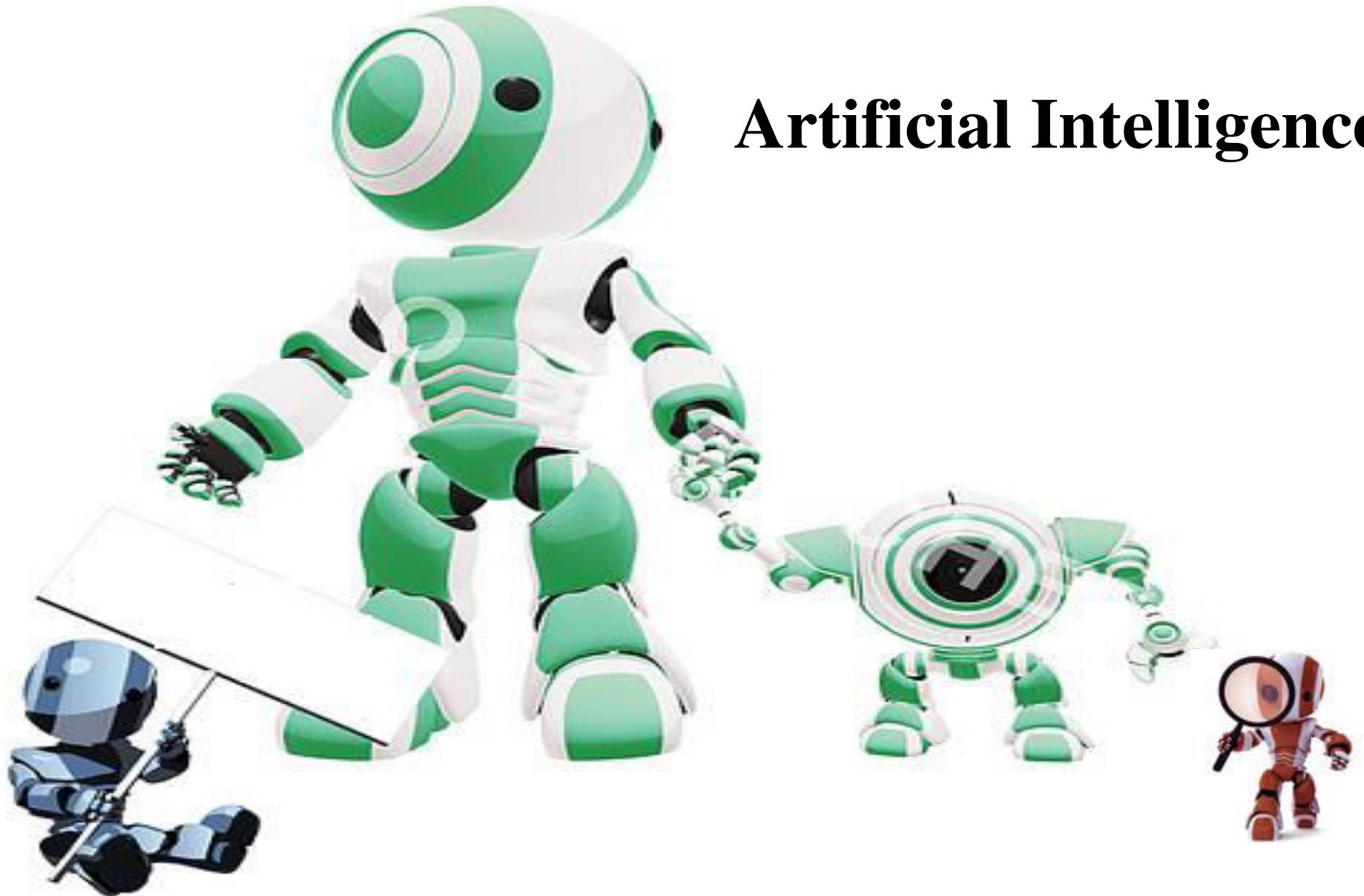
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Artificial Intelligence



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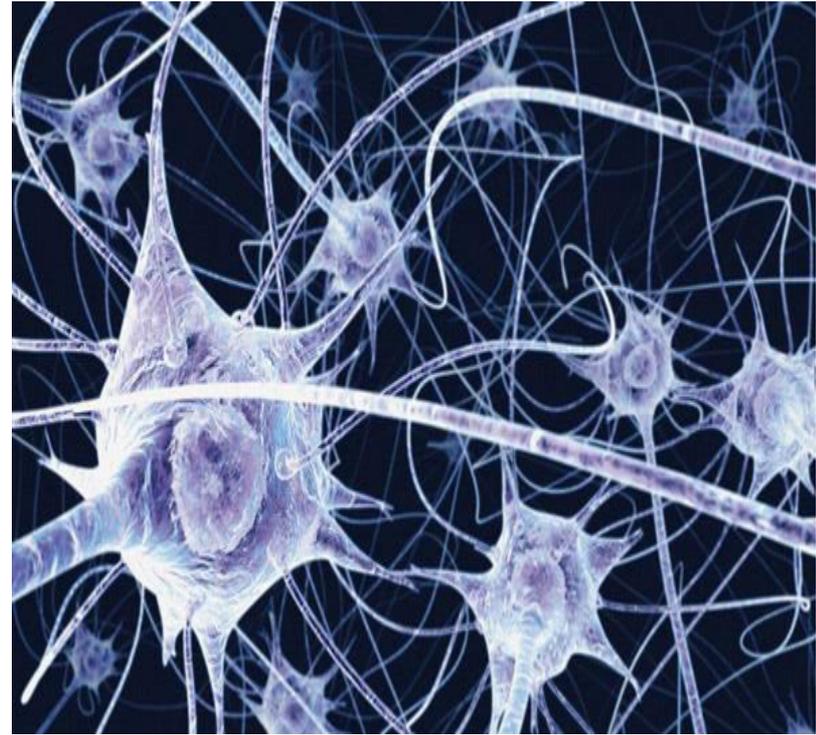
Recently published articles

- Recent approaches to global optimization problems through particle swarm optimization
- On the computation of all global minimizers through particle swarm optimization
- Particle swarm optimization method in multiobjective problems
- Particle swarm optimization method for constrained optimization problems
- Effective backpropagation training with variable stepsize
- Stretching technique for obtaining global minimizers through particle swarm optimization
- Multiobjective optimization using parallel vector evaluated particle swarm optimization
- Improving the convergence of the backpropagation algorithm using learning rate adaptation methods
- A first study of fuzzy cognitive maps learning using particle swarm optimization

What **is Intelligence???**

❖ Intelligence is the ability to learn about, to learn from, to understand about, and interact with one's environment.

❖ Intelligence is the faculty of understanding



What Is Artificial Intelligence???

- ❖ Artificial Intelligence (AI) is usually defined as the science of making computers do things that require intelligence when done by humans.
- ❖ A.I is the study of ideas that enable computers to be intelligent



How Does AI Works??

Artificial intelligence works with the help of

- **Artificial Neurons (Artificial Neural Network)**

And

- **Scientific theorems(If-Then Statements, Logics)**

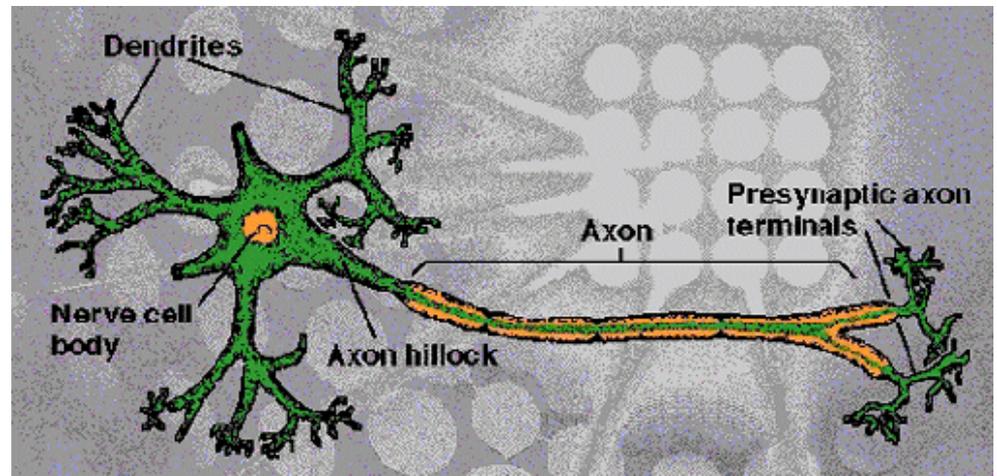
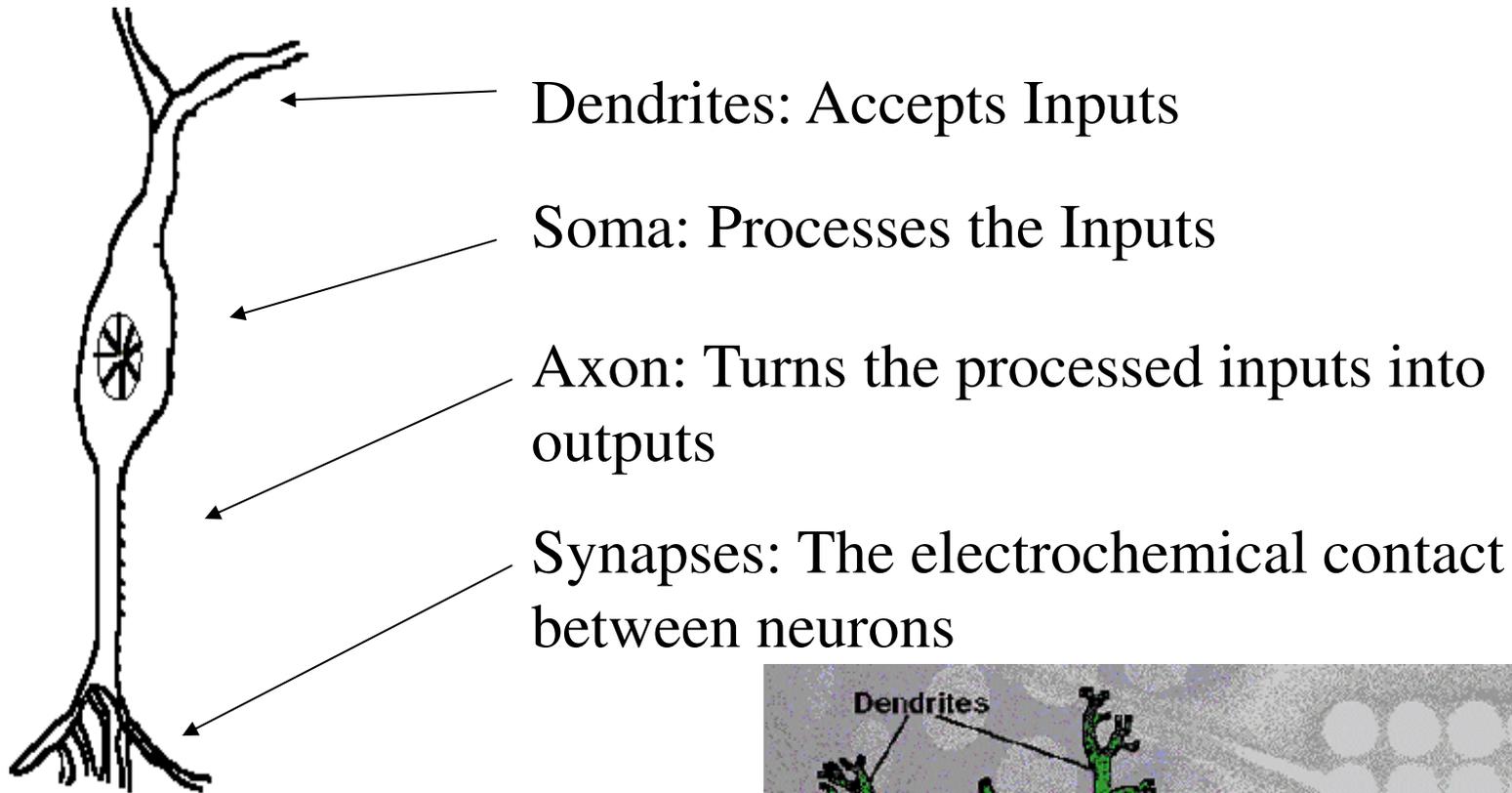


What is Neural Networking??

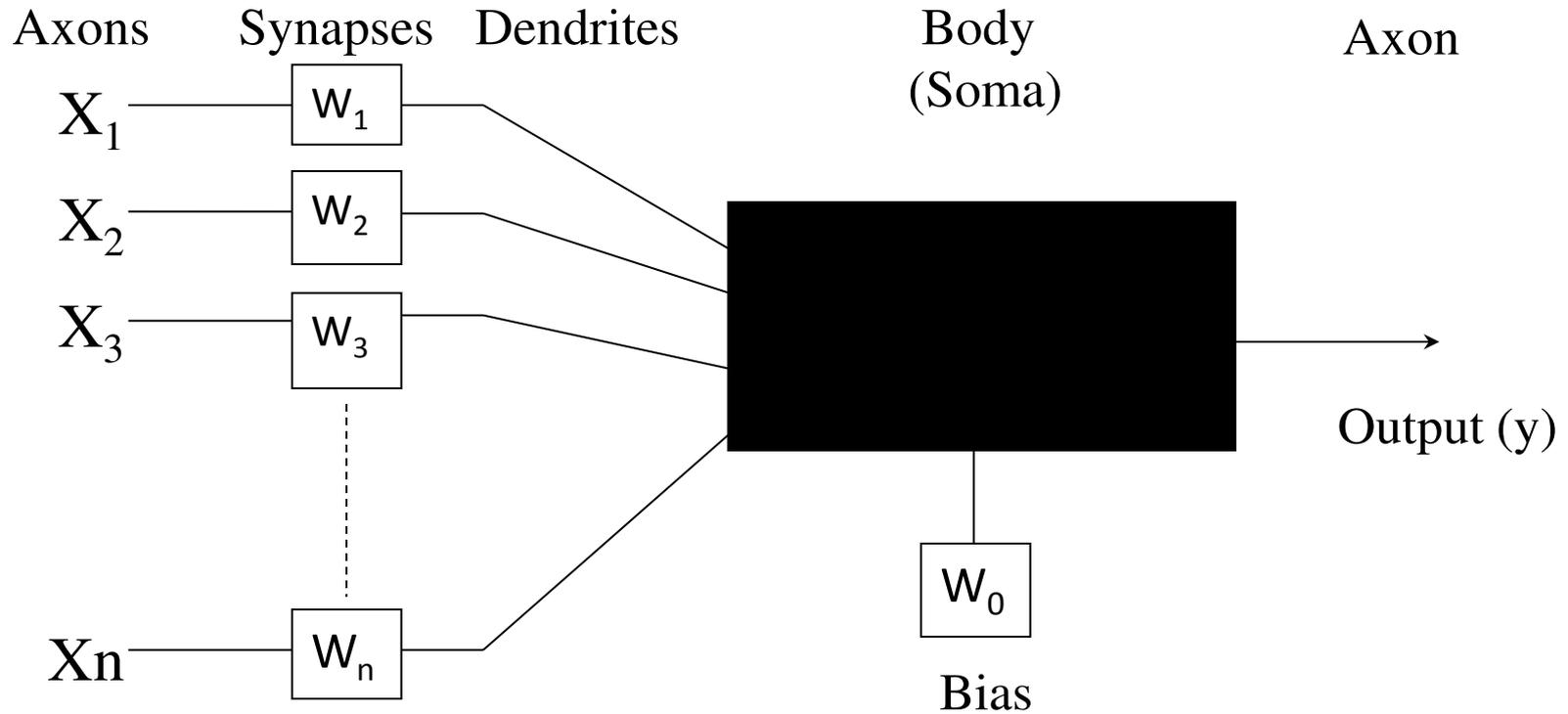
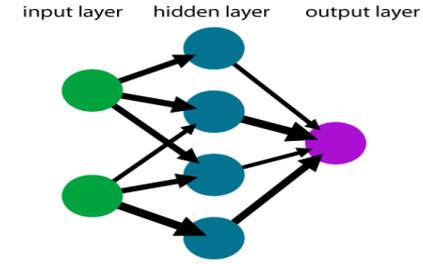
- ❖ **Artificial neural networks are composed of interconnecting artificial neurons (programming constructs that mimic the properties of biological neurons).**



Structure of a Biological Neuron



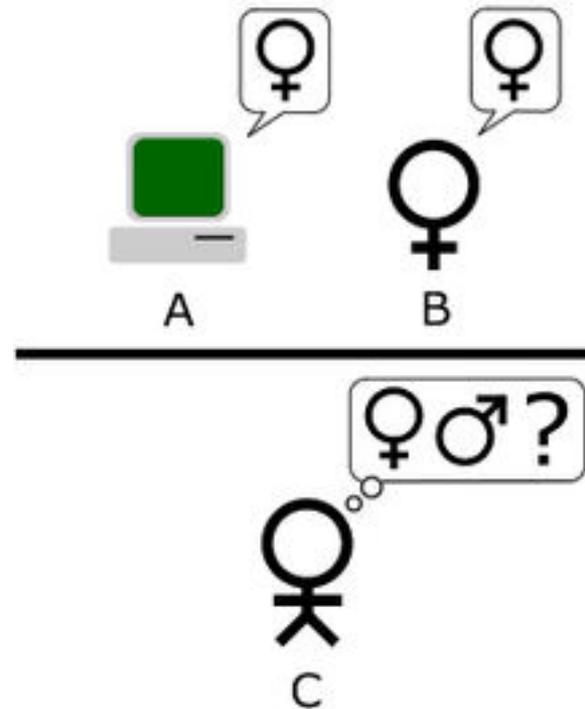
An Artificial Neuron



Turing Test

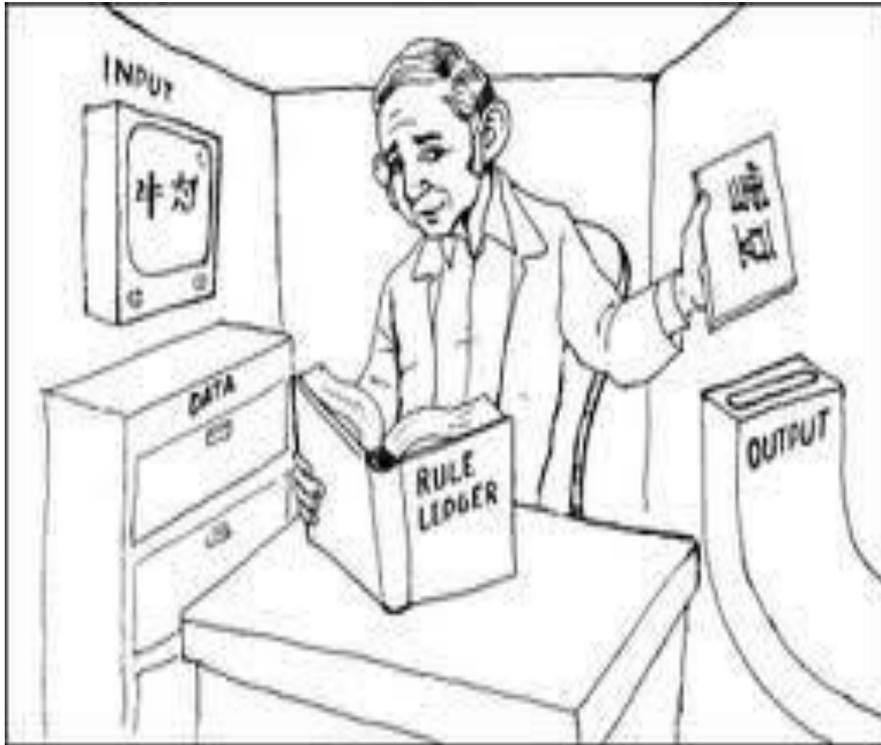
Imitation Game Test!!!!

❖ The **Turing test** is a test of a machine's ability to demonstrate intelligence



Chinese Room Test

A Counter Argument to Turing Test



If you see this shape,

"什麼"

followed by this shape,

"帶來"

followed by this shape,

"快樂"

then produce this shape,

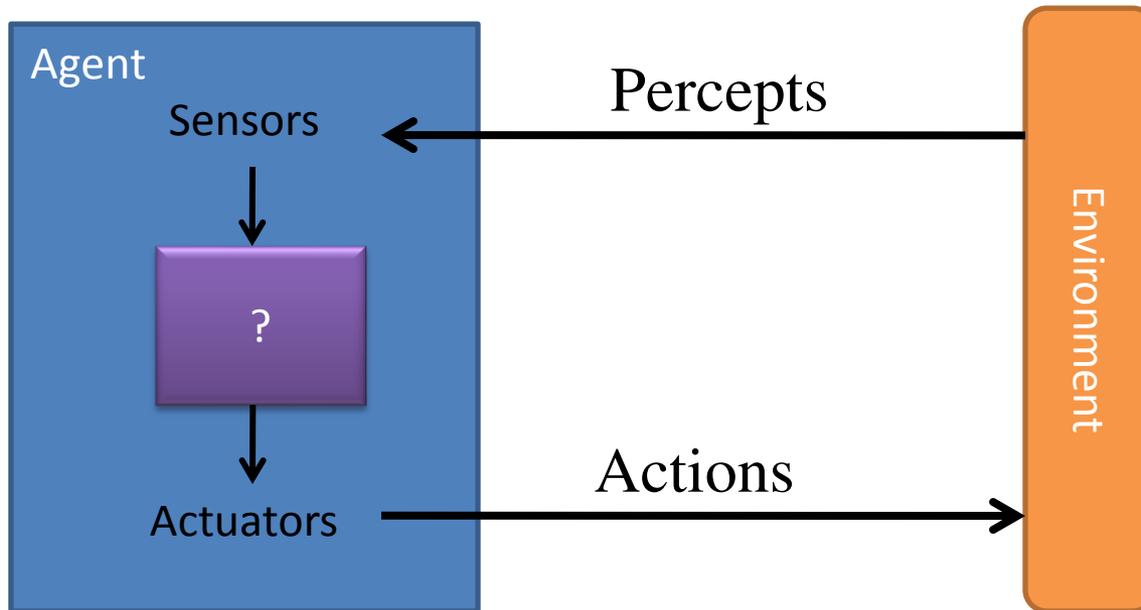
"爲天"

followed by this shape,

"下式".



Intelligent agents



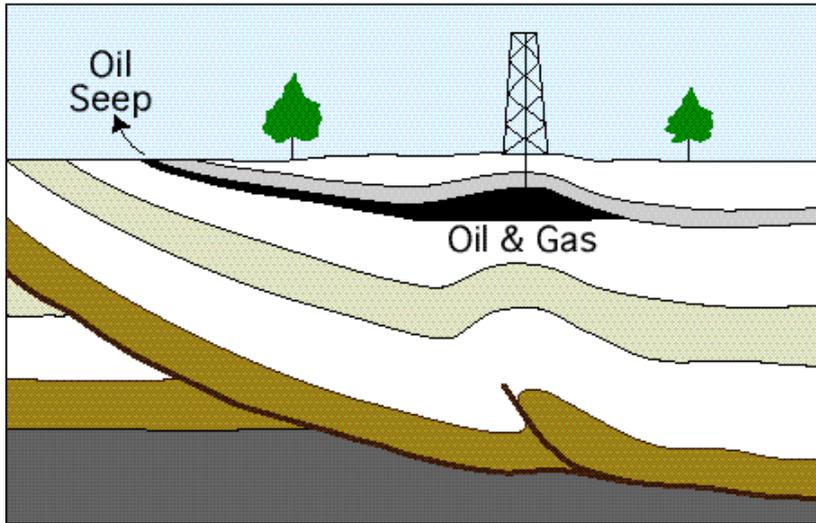
Examples Of Artificial Intelligence



Expert Systems!!

- ❖ An expert system is a computer program that is designed to hold the accumulated knowledge of one or more domain experts
- ❖ It reasons with knowledge of some specialist subject with a view to solving problems or giving advice
- ❖ They are tested by being placed in the same real world problem solving situation

Applications of Expert Systems



PROSPECTOR:
Used by geologists to identify sites for drilling or mining

PUFF:
Medical system
for diagnosis of respiratory conditions

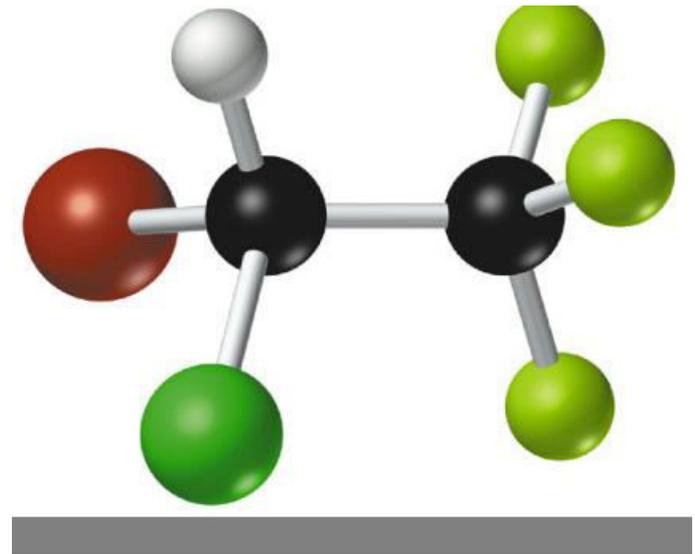


Applications of Expert Systems



DENDRAL: Used to identify the structure of chemical compounds. First used in 1965

LITHIAN: Gives advice to archaeologists examining stone tools



Machine Learning!

Machine learning is a scientific discipline concerned with the design and development of algorithms that allow machines to mimic human intelligence.



There are Three ways that A.I learns

❖ Failure Driven Learning

❖ Learning by being Told

❖ Learning by Exploration

Resemblance To Human Mind....

❖ The special ability of artificial intelligence is to reach a solution based on facts rather than on a preset series of steps—
is what most closely resembles the thinking function of the human brain



Human Intelligence VS Artificial Intelligence



Human Intelligence VS Artificial Intelligence

Pros

Human Intelligence

- Intuition, Common sense, Judgement, Creativity, Beliefs etc
- The ability to demonstrate their intelligence by communicating effectively
- Plausible Reasoning and Critical thinking

Artificial Intelligence

- Ability to simulate human behavior and cognitive processes
- Capture and preserve human expertise
- Fast Response. The ability to comprehend large amounts of data quickly.

Human Intelligence VS Artificial Intelligence

Cons

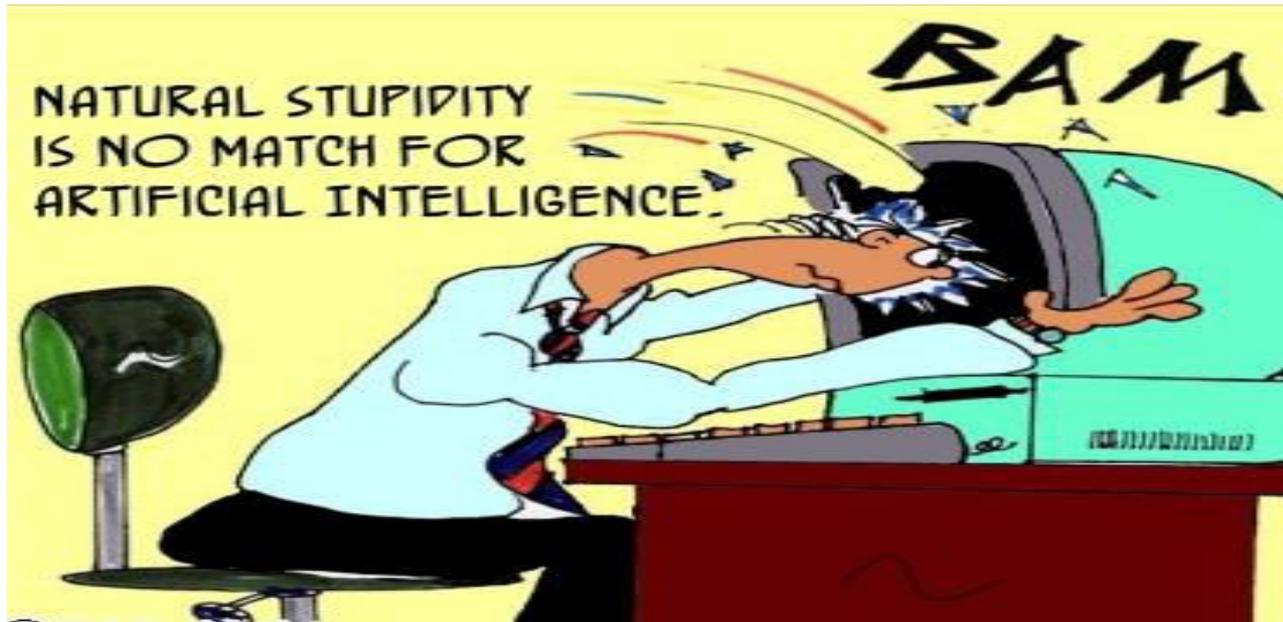
Human Intelligence

- Humans are fallible
- They have limited knowledge bases
- Information processing of serial nature proceed very slowly in the brain as compared to computers
- Humans are unable to retain large amounts of data in memory.

Artificial Intelligence

- No “common sense”
- Cannot readily deal with “mixed” knowledge
- May have high development costs
- Raise legal and ethical concerns

Human Intelligence VS Artificial Intelligence



We achieve more than we know. We know more than we understand. We understand more than we can explain (Claude Bernard, 19th C French scientific philosopher)

Artificial Intelligence VS Conventional Computing

Artificial Intelligence

- AI software uses the techniques of search and pattern matching
- Programmers design AI software to give the computer only the problem, not the steps necessary to solve it

Conventional Computing

- Conventional computer software follow a logical series of steps to reach a conclusion
- Computer programmers originally designed software that accomplished tasks by completing algorithms

Psychology And Artificial intelligence

The functionalist approach of AI views the mind as a representational system and psychology as the study of the various computational processes whereby mental representations are constructed, organized, and interpreted.

(Margaret Boden's essays written between 1982 and 1988)

Artificial intelligence & Our society

Why we need AI??

❖ To supplement natural intelligence for e.g we are building intelligence in an object so that it can do what we want it to do, as for example-- robots, thus reducing human labour and reducing human mistakes

• My Perspective

**For Humans Intelligence is no more than TAKING a right
decision at right time**

And

**For Machines Artificial Intelligence is no more than
CHOOSING a right decision at right time**

**I think Artificial intelligence is the Second intelligence
ever to exist**



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International Journal of Swarm Intelligence and Evolutionary Computation

International Journal of Swarm
Intelligence and Evolutionary
Computation

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➤ A Global Colloquium on Artificial Intelligence



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