SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore – 641 107

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## DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING-IOT Including CS&BCT

COURSE NAME :**19SB601 ARTIFICIAL INTELLIGENCE AND NATURAL LANGUAGE PROCESSING**

III YEAR / VI SEMESTER

Unit I-INTRODUCTION TO ARTIFICIAL INTELLIGENCE& INTELLIGENT SYSTEMS

Topic : Intelligence- Types of Intelligence

15-03-2023

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ARTIFICIAL INTELLIGENT

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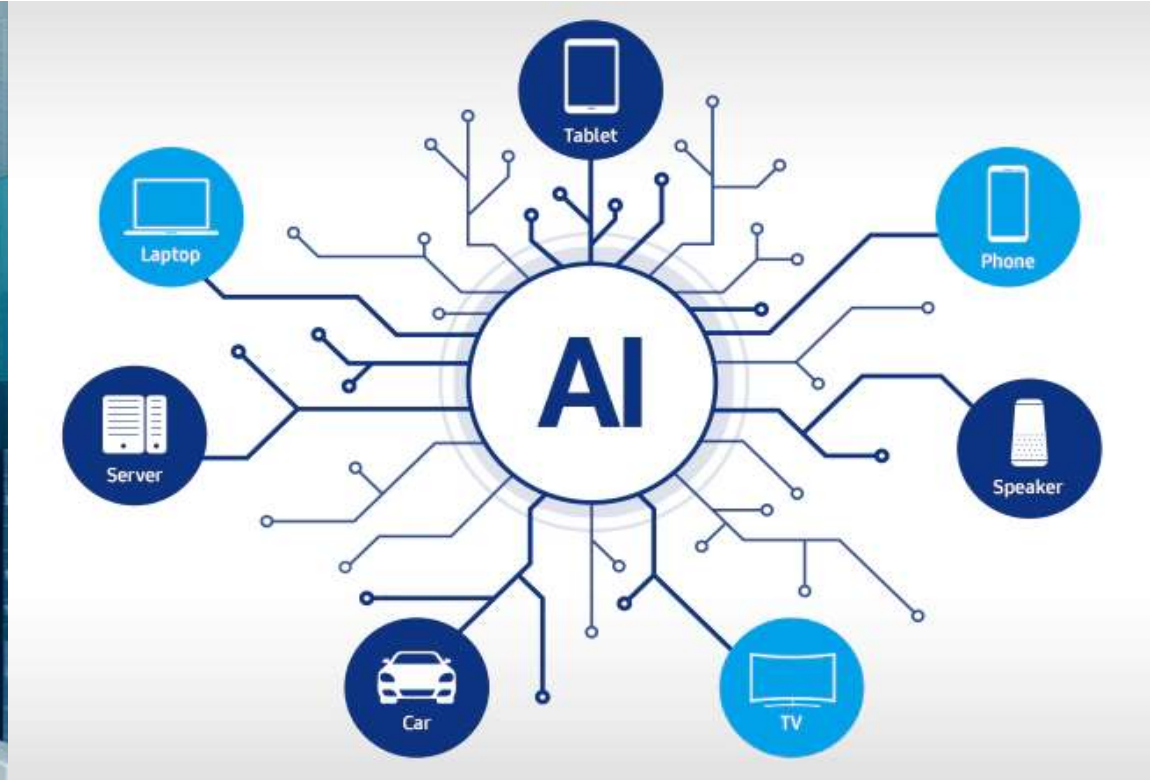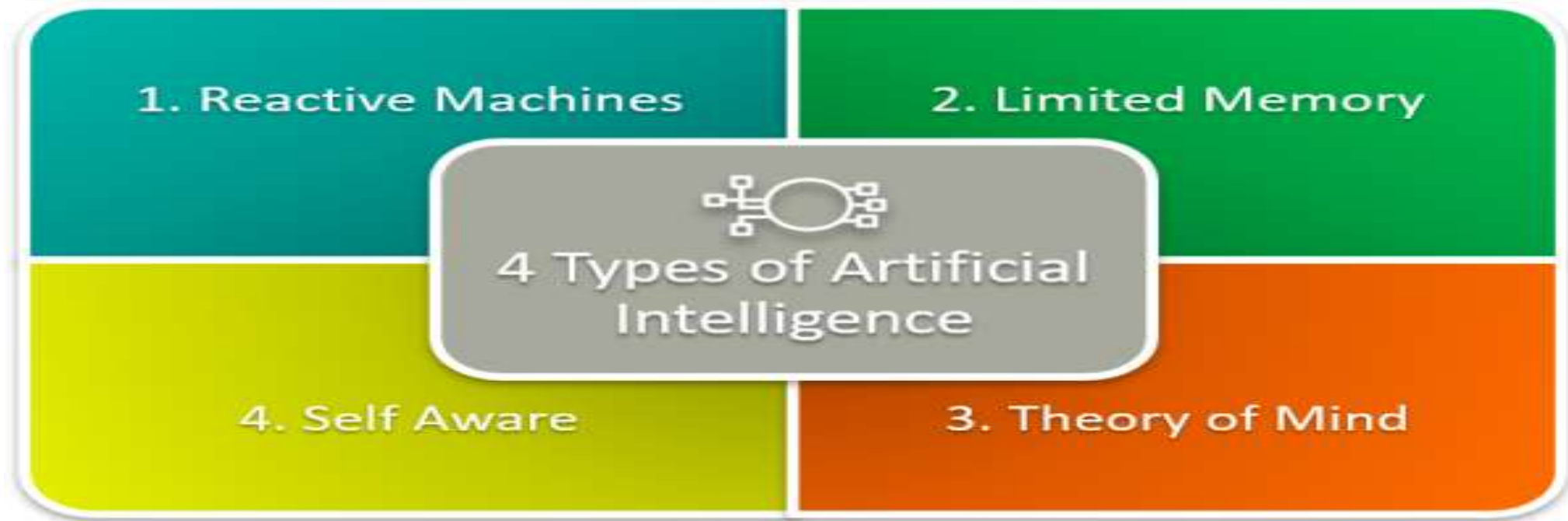
What is Intelligence

The ability of a system to calculate, reason, perceive relationships and analogies, learn from experience, store and retrieve information from memory, solve problems, comprehend complex ideas, use natural language fluently, classify, generalize, and adapt new situations.

TYPES OF INTELLIGENCE

The four A.I. types are

1. Reactive Machines

2. Limited Memory

3. Theory of Mind

4. Self Aware

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Reactive Machines

➢ Reactive Machines perform basic operations.

➢ This level of A.I. is the simplest.

➢ These types react to some input with some output.

➢ There is no learning that occurs.

➢ This is the first stage to any A.I. system.

➢ A machine learning that takes a human face as input and outputs a box around the face to identify it as a face is a simple, reactive machine.

➢ The model stores no inputs, it performs no learning.

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Limited Memory

➢ Limited memory types refer to an A.I.'s ability to store previous data and/or predictions, using that data to make better predictions.

➢ With Limited Memory, machine learning architecture becomes a little more complex.

➢ Every machine learning model requires limited memory to be created, but the model can get deployed as a reactive machine type.

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Theory of Mind

Theory of mind is the third type of AI and the next level of AI systems which is in the **innovation stage.**

This type of AI interacts with the thoughts and emotions of humans.

This AI basically will focus on individuals whose minds can be shaped by multiple factors, like understanding humans

Self-aware artificial intelligence is nothing but machines and robots performing and thinking like human beings.
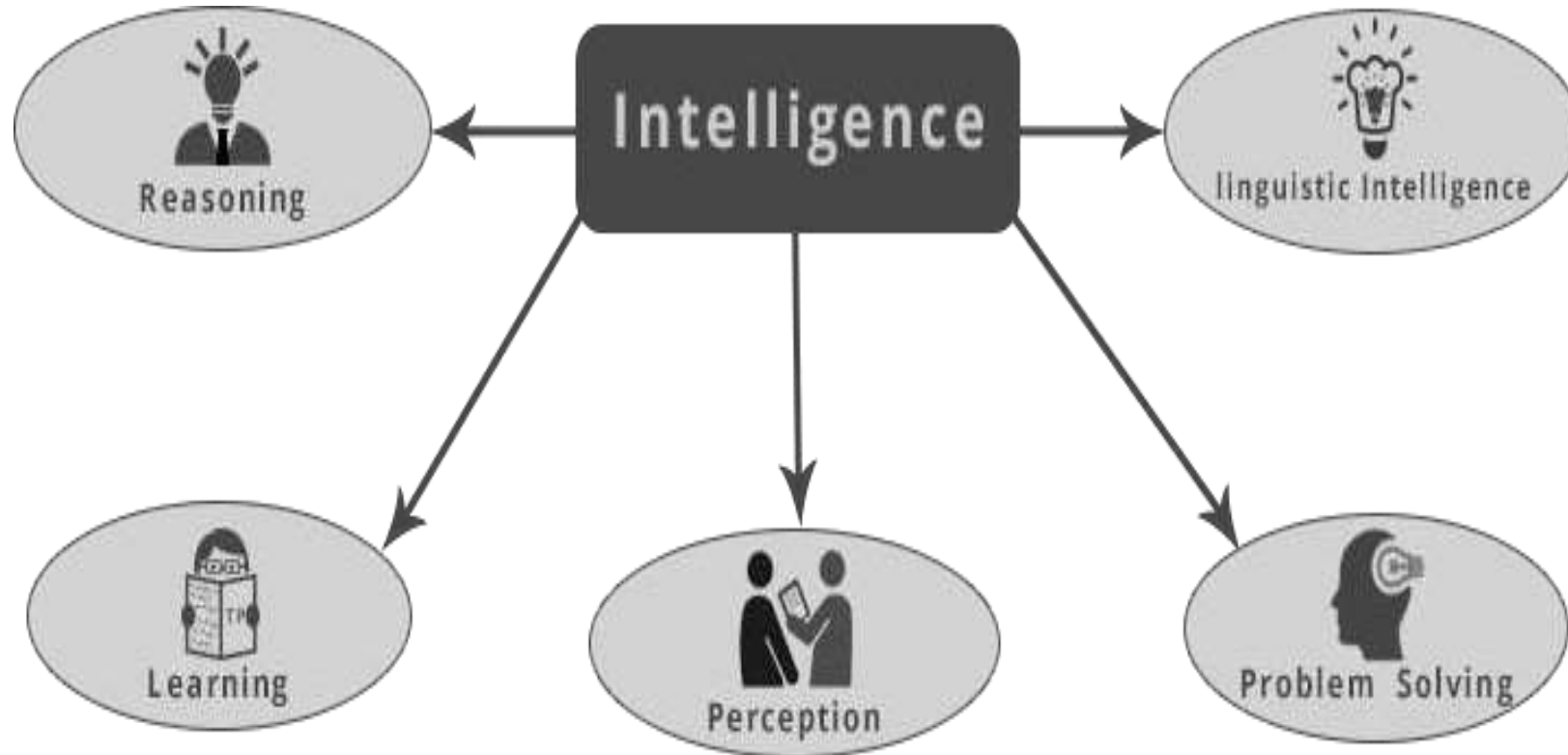
Example

1. robotic arm

VERZEO

Self-Awareness in Artificial Intelligence

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What is Intelligence Composed of?

The intelligence is intangible. It is composed of:

- Reasoning
- Learning
- Problem Solving
- Perception
- Linguistic Intelligence

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Intelligence-types of Intelligence

1. Reasoning

➢ It is the set of processes that enables us to provide basis for judgement, making decisions, and prediction.

➢ There are broadly two types:

Inductive Reasoning	Deductive Reasoning
It conducts specific observations to makes broad general statements.	It starts with a general statement and examines the possibilities to reach a specific, logical conclusion.
Even if all of the premises are true in a statement, inductive reasoning allows for the conclusion to be false.	If something is true of a class of things in general, it is also true for all members of that class.
Example: "Nita is a teacher. All teachers are studious. Therefore, Nita is studious."	Example: "All women of age above 60 years are grandmothers. Shalini is 65 years. Therefore, Shalini is a grandmother."

2. Learning: It is the activity of gaining knowledge or skill by studying, practicing, being taught, or experiencing something. Learning enhances the awareness of the subjects of the study.

The ability of learning is possessed by humans, some animals, and AI-enabled systems. Learning is categorized as:

- **Auditory Learning:** It is learning by listening and hearing. For example, students listening to recorded audio lectures.

- **Motor Learning:** It is learning by precise movement of muscles. For example, picking objects, Writing, etc.

- **Observational Learning:** To learn by watching and imitating others. For example, child tries to learn by mimicking her parent.

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- **Perceptual Learning:** It is learning to recognize stimuli that one has seen before. For example, identifying and classifying objects and situations.

- **Relational Learning:** It involves learning to differentiate among various stimuli on the basis of relational properties, rather than absolute properties. For Example, Adding 'little less' salt at the time of cooking potatoes that came up salty last time, when cooked with adding say a tablespoon of salt.

- **Spatial learning:** It is learning through visual stimuli such as images, colors, maps, etc. For Example, A person can create roadmap in mind before actually following the road.

- **Stimulus-Response Learning:** It is learning to perform a particular behavior when a certain stimulus is present. For example, a dog raises its ear on hearing doorbell.

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3.Problem solving:

➢ It is the process in which one perceives and tries to arrive at a desired solution from a present situation by taking some path, which is blocked by known or unknown hurdles.

➢ Problem solving also includes **decision making,** which is the process of selecting the best suitable alternative out of multiple alternatives to reach the desired goal are available.

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4.Perception:

➢ It is the process of acquiring, interpreting, selecting, and organizing sensory information. Perception presumes **sensing**.

➢ In humans, perception is aided by sensory organs. In the domain of AI, perception mechanism puts the data acquired by the sensors together in a meaningful manner.

5.Linguistic Intelligence:

➢ It is one's ability to use, comprehend, speak, and write the verbal and written language.

➢ It is important in interpersonal communication.

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Difference between Human and Artificial Intelligence

Artificial Intelligence

- AI machine depend on the data given to them.
- AI takes much more time to adjust to unused changes.
- Modern Computer normally uses 2 watts energy.
- Machines can handle more data at a speedier rate.
- Artificial Intelligence aims to build machines that can mimic human behavior and perform human-like actions.

Human Intelligence

- Human beings use brain power.
- Human beings can adopt to changes easily.
- Human beings use about 25 watts.
- Humans cannot beat the speed of computers.
- While Human Intelligence aims to adapt to new environments by utilizing a combination of different cognitive processes.

Any Query????

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Thank you……

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