

Introduction to Artificial Intelligence

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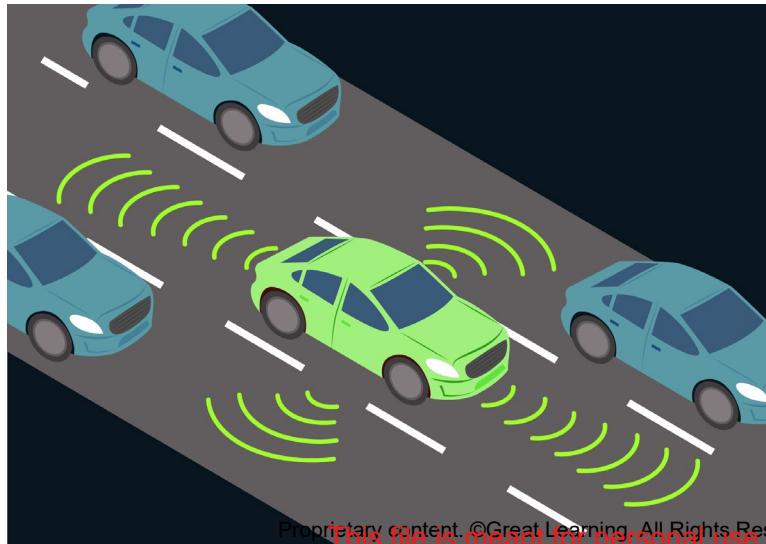
Agenda

- What is AI?
- Neural Networks
- Natural Language Processing (NLP)
- Computer Vision

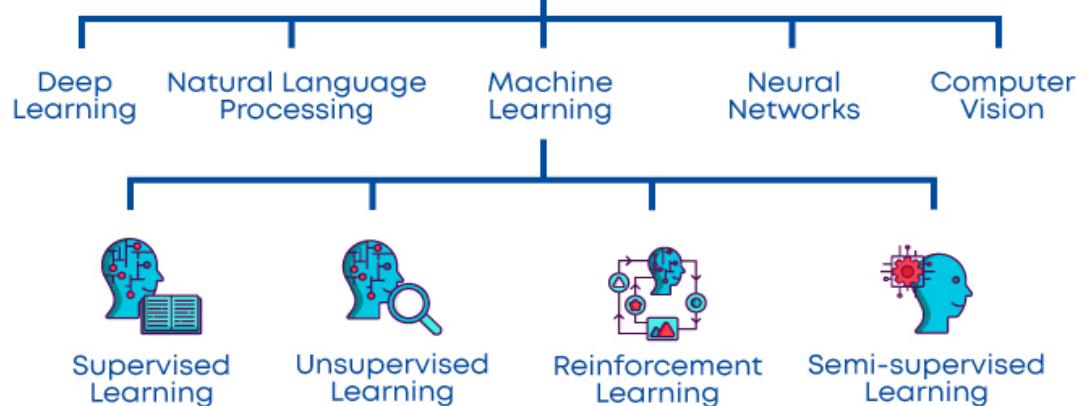
What is AI?

Artificial Intelligence is:

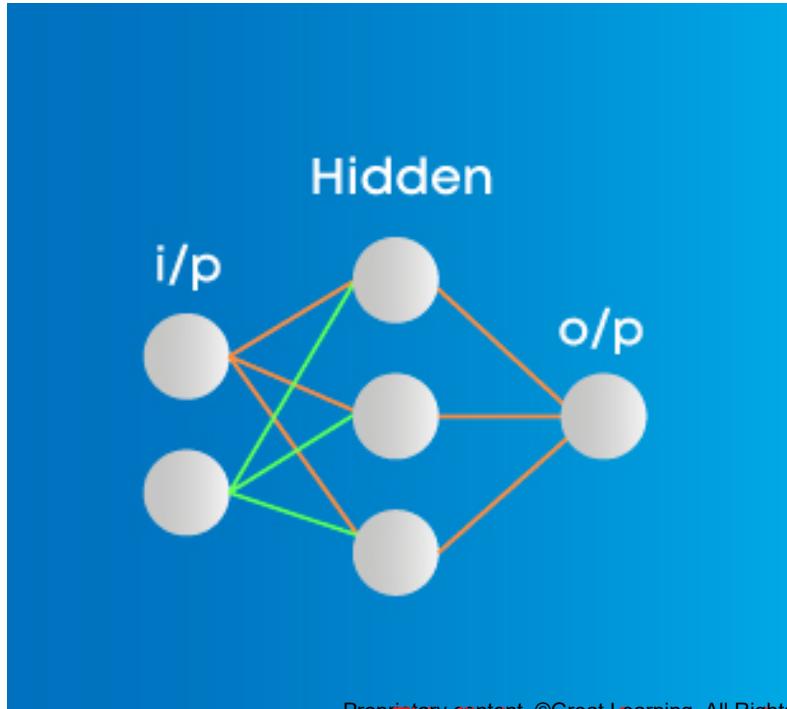
- Capable of performing tasks intelligently without being explicitly instructed
- Capable of thinking and acting rationally and humanely



What is AI?

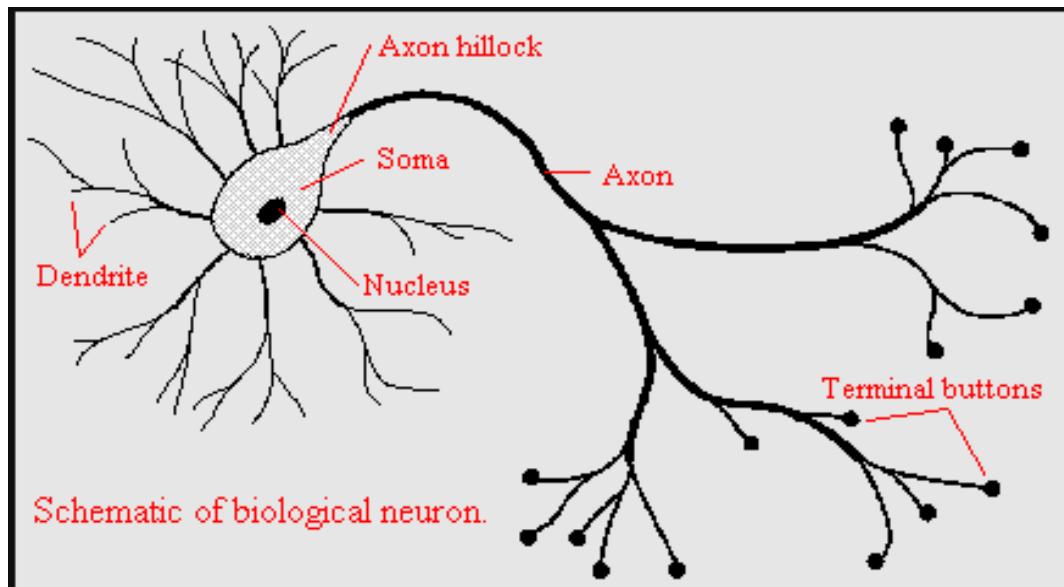


Neural Networks



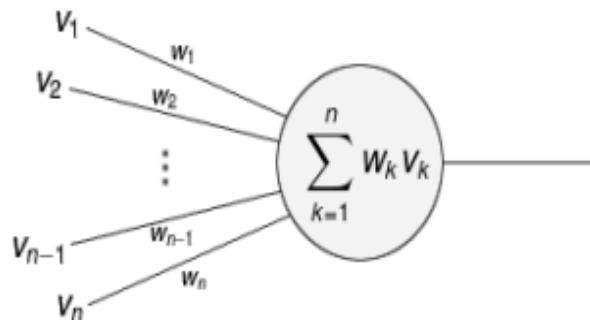
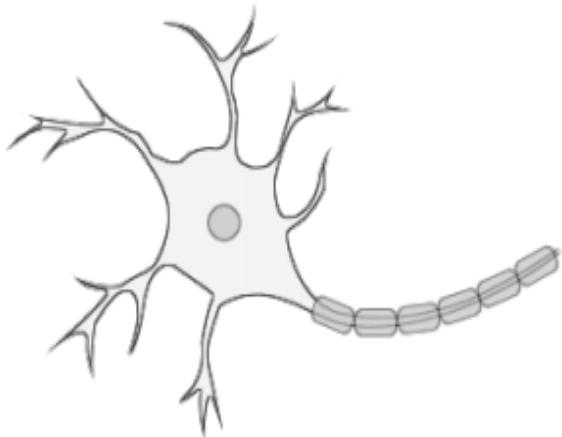
Neural Networks

Biological Neuron

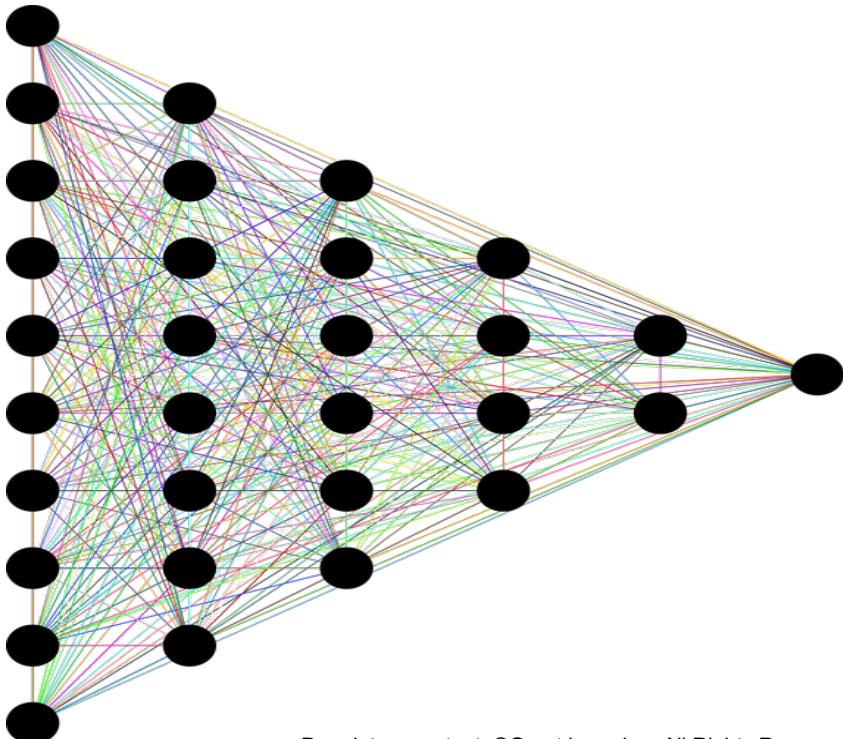


Neural Networks

Artificial neuron is inspired by biological neuron



Deep Neural Network



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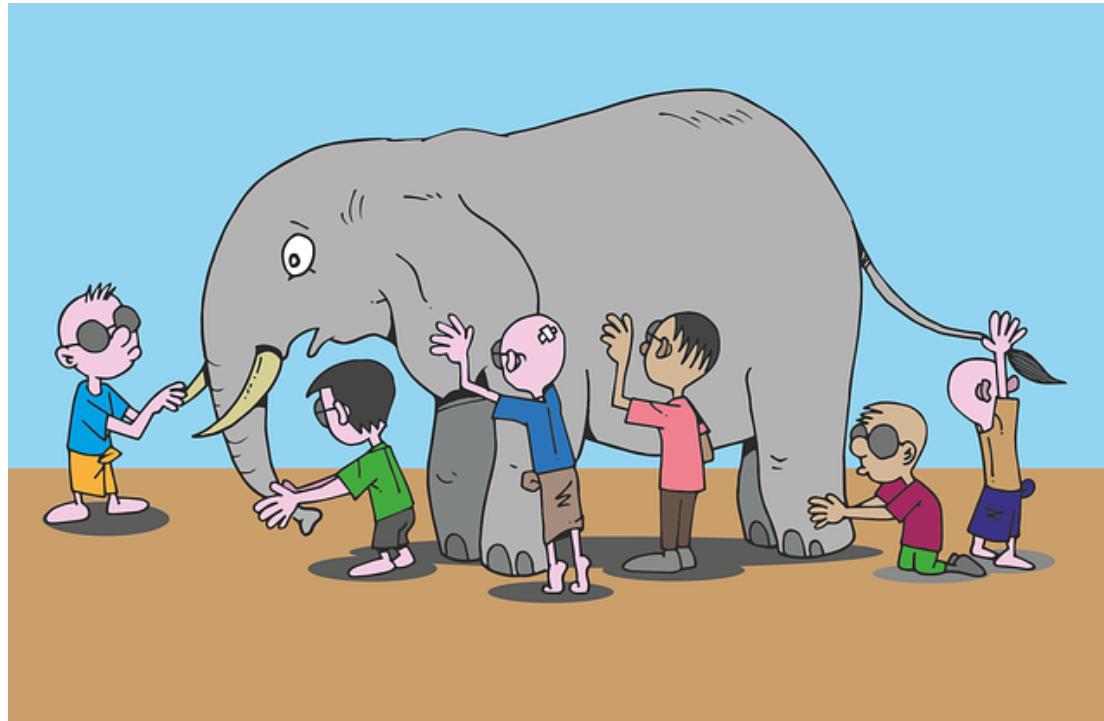
Natural Language Processing

Natural Language Processing is:

- The application of computational linguistics to build real-world applications which work with languages comprising of varying structures
- Used to understand and interpret human language to the machine.



Natural Language Processing



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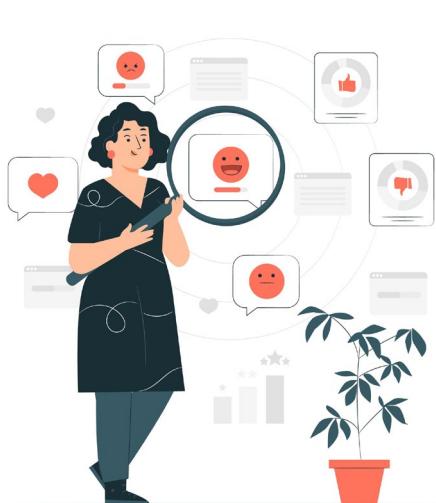
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Natural Language Processing

- All of us have come across Google's keyboard which suggests auto-corrects, word predicts (words that could be used) and more. It uses ML algorithms to suggest the right vocabulary, tonality, and much more, to make sure that the content written is professionally apt, and captures the total attention of the reader.
- Translation systems use language modelling to work efficiently with multiple languages.

Natural Language Processing

Examples of Natural Language Processing



Sentiment Analysis



Chatbot

Computer Vision

Computer Vision is a field of study that seeks to enable computing systems to understand and process digital photographs, videos, displays etc. and behave as if they have a vision just as other living beings have.



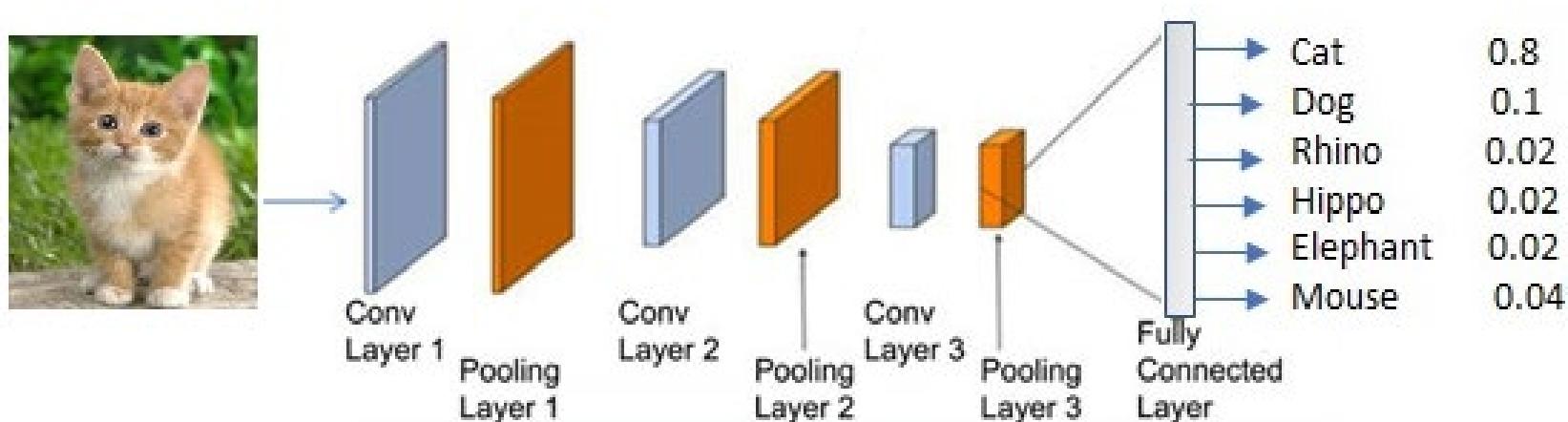
Computer Vision

“Computer vision” is an overarching term and includes the following tasks:

- a. **Image classification** – It labels an image based on the object in the image.
- b. **Object detection/localization/segmentation** – Detects an object in an image and localizes it using a bounding box.
- c. **Segmentation** – It is a pixel-wise classification to give the separation of the objects.
- d. **Similarity learning** – Which two images are similar based on the content of the image?
- e. **Image captioning** – Describing the image (combines NLP with computer vision)
- f. **Generative modelling** – Generate images based on the style of another image
- g. **Video analysis** – Processes the entire set of digital frames for object detection and tracking

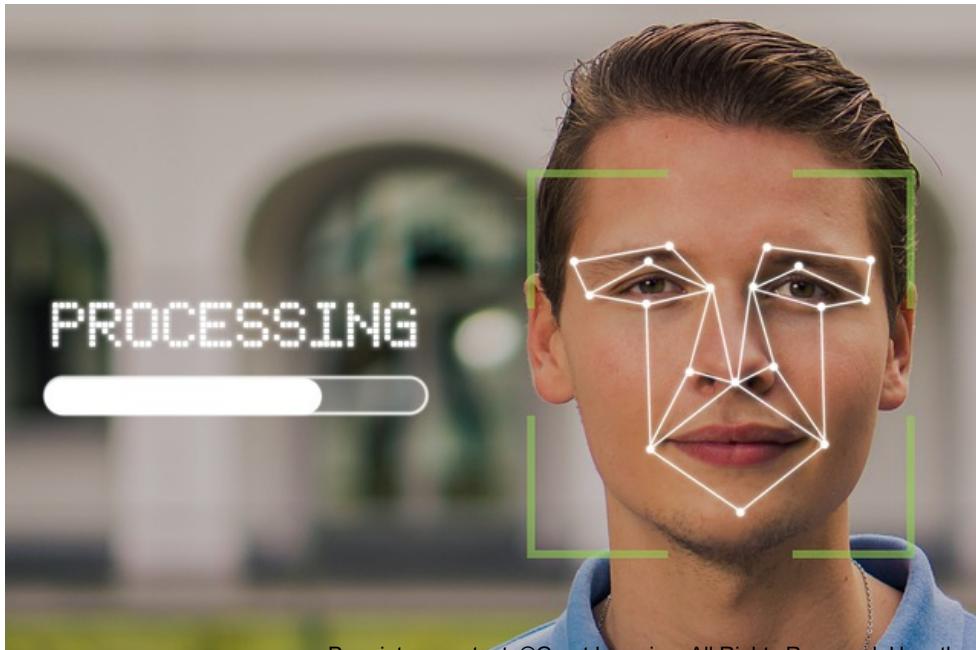
Computer Vision

Example: Image classification



Computer Vision

Face Recognition



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Computer Vision

Video and Traffic analytics



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Summary