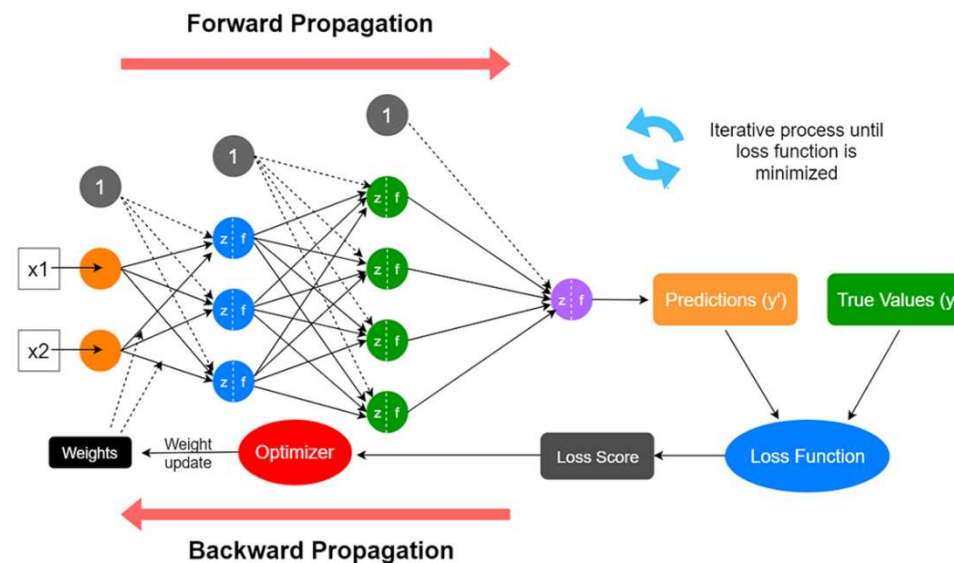


Foundations of AI and Deep Learning



Understanding AI and its Evolution



What is AI?

Artificial intelligence or AI is the branch of computer science that studies machine intelligence.

EXAMPLES OF APPLICATIONS

- Search engines (Google)
- Content recommendations (Netflix, YouTube)
- Self-driving vehicles
- Automatic language translation
- Facial recognition
- Computer games
- Spam filters

An AI is a computer system that performs tasks that usually require human intelligence.



What is AI?

Machine Learning

Using sample data to train computer programs to recognize patterns based on algorithms.



Neural Networks

Computer systems designed to imitate the neurons in a brain.



Natural Language Processing

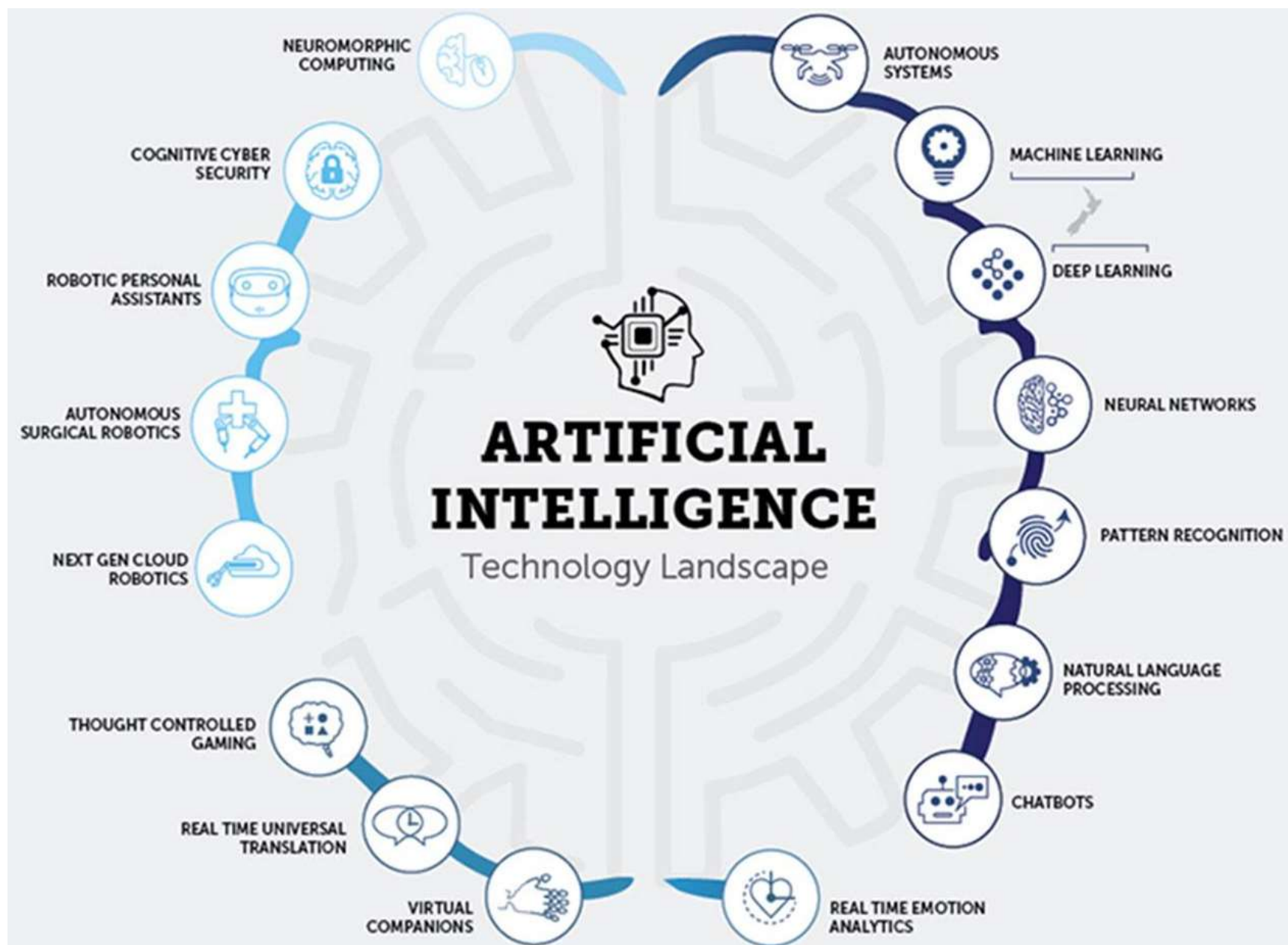
The ability to understand speech, as well as understand and analyze documents.



Robotics

Machines that can assist people without actual human involvement.



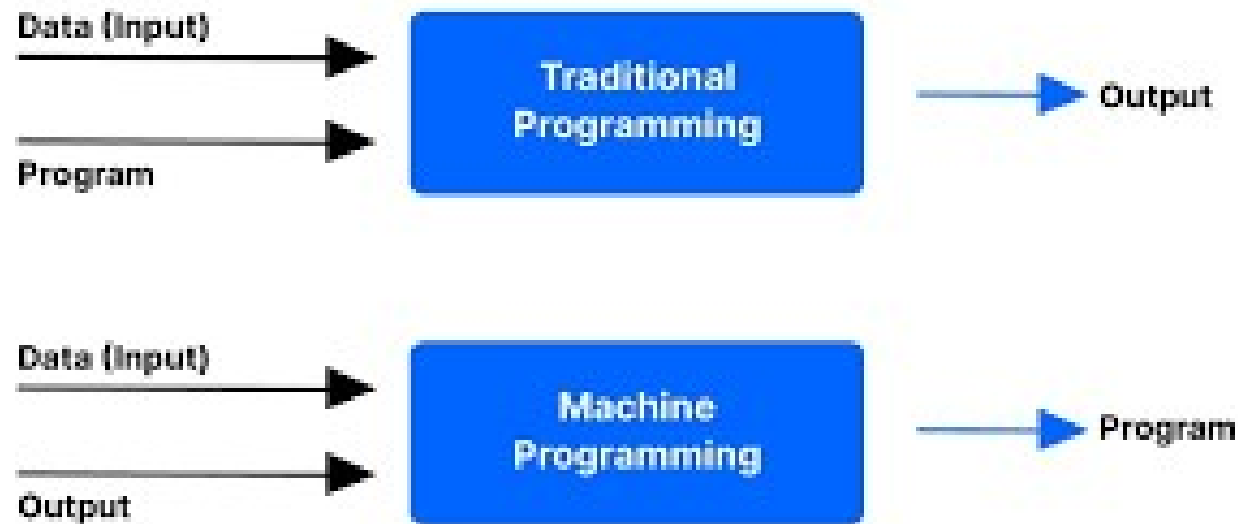


Why does AI matter?

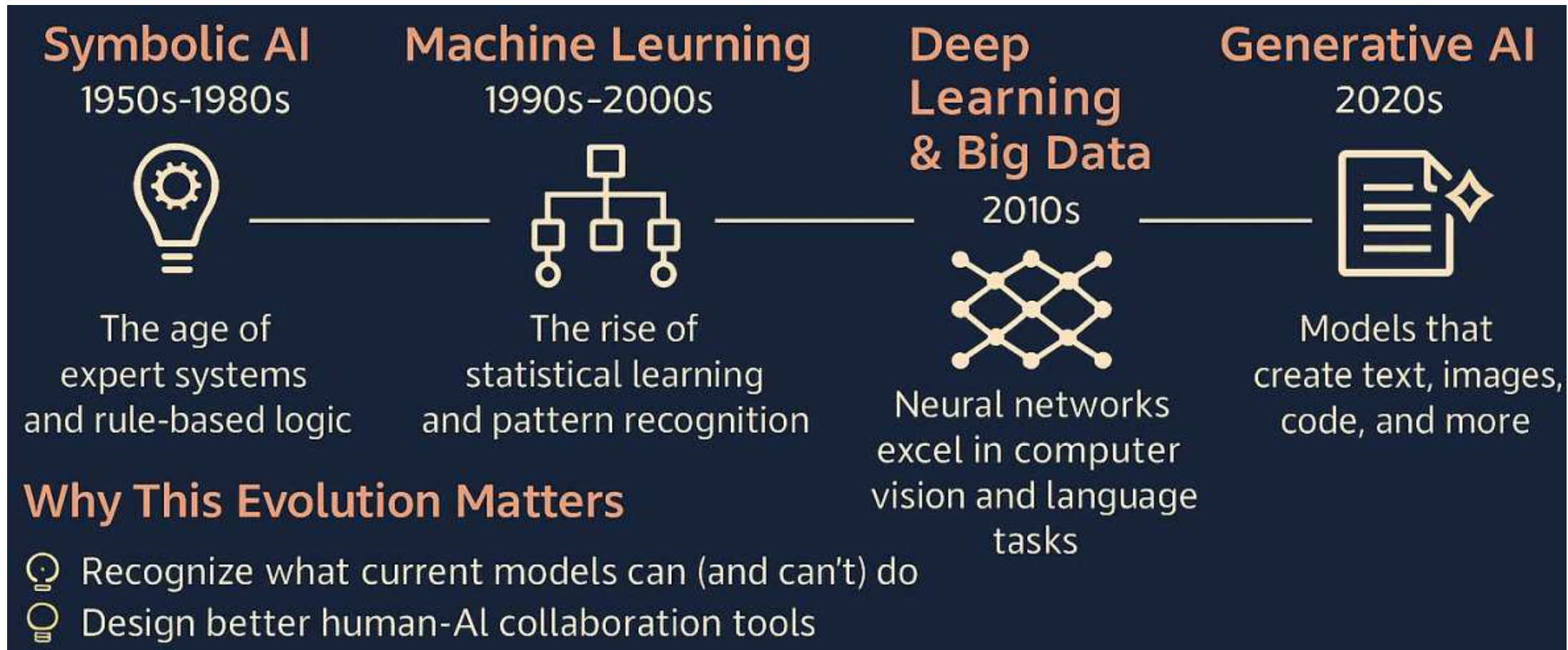
- AI is a transformative tool that
 - Amplifies human intelligence
 - Allows us to solve global challenges
 - Boost productivity, and
 - Reshape our world



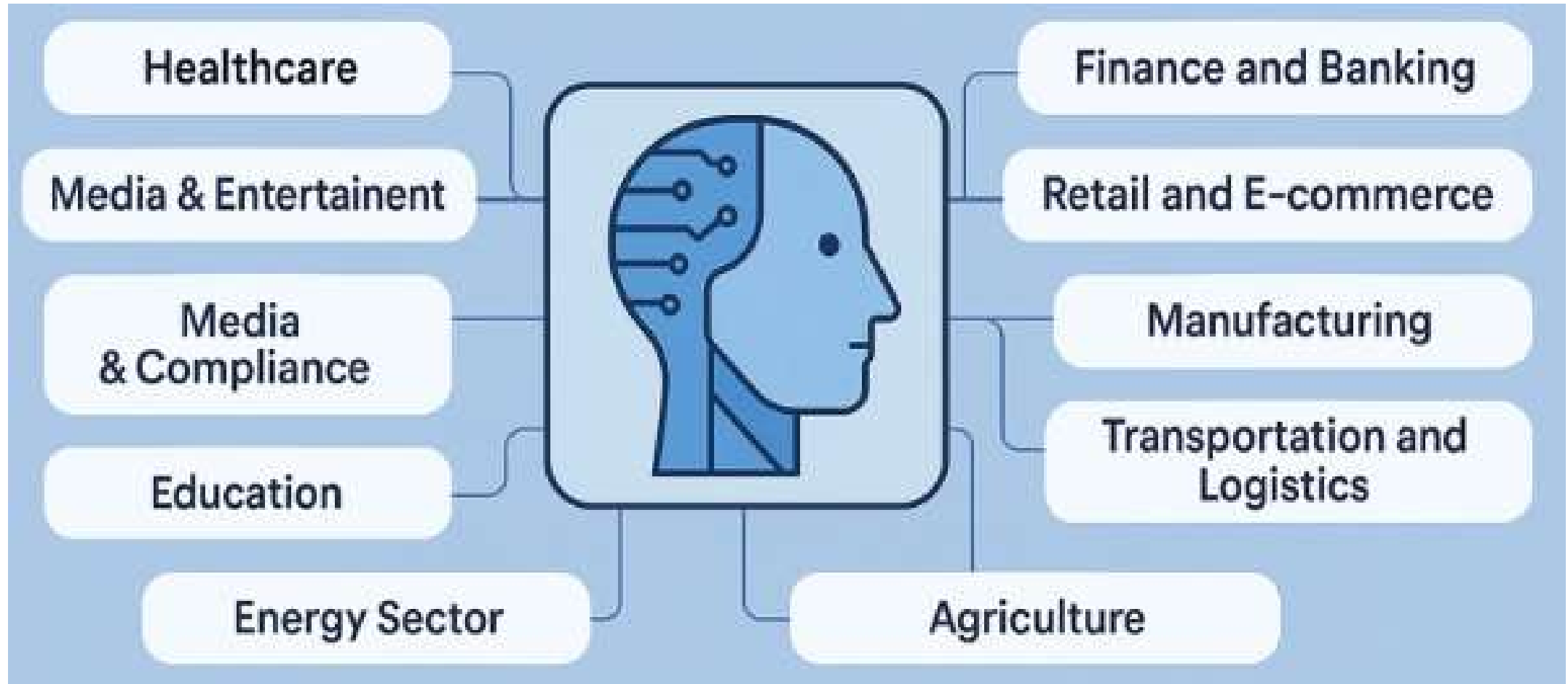
Evolution to machine learning and deep learning



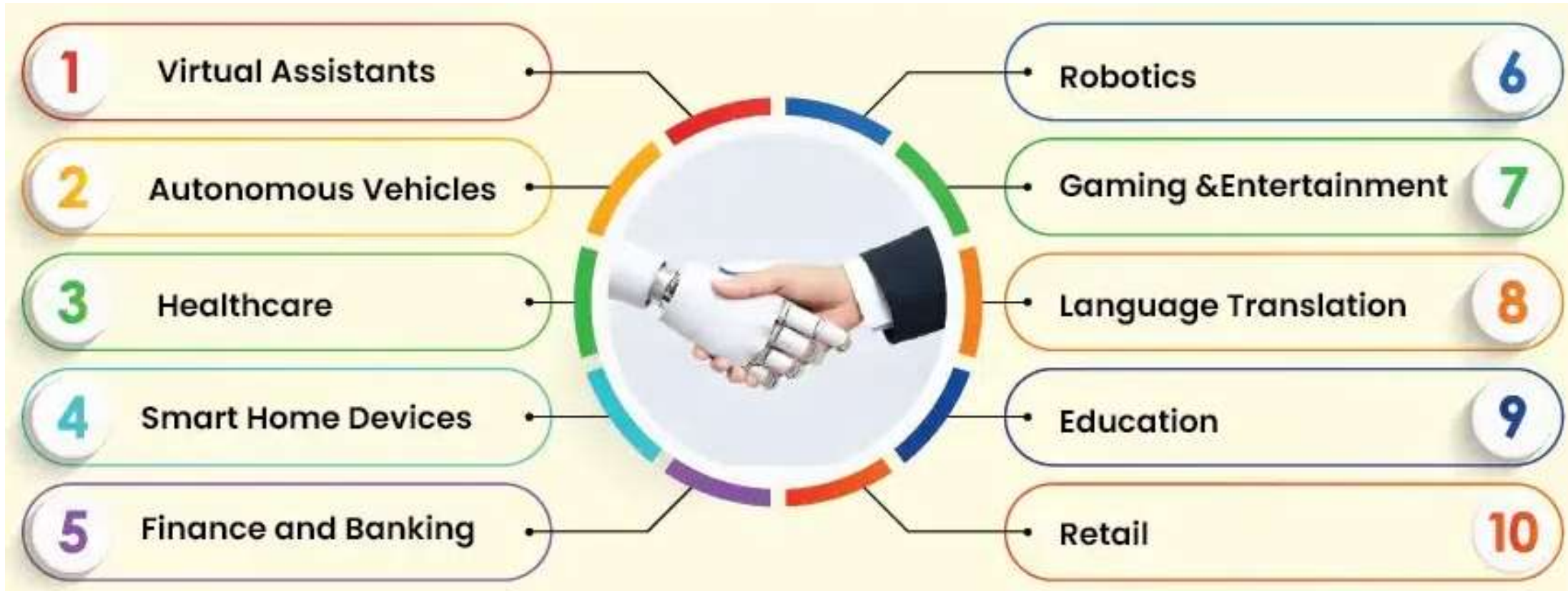
Evolution to machine learning and deep learning



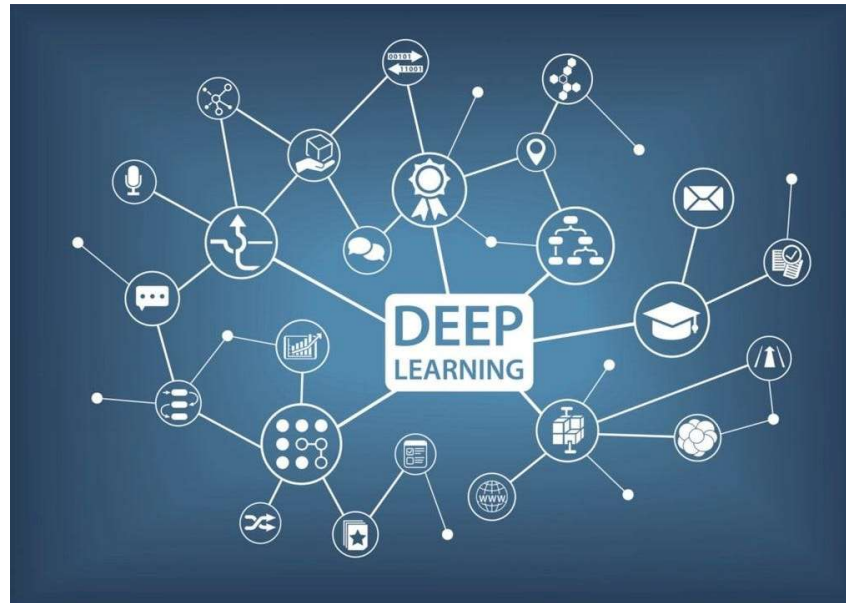
Real-world applications of AI in different industries



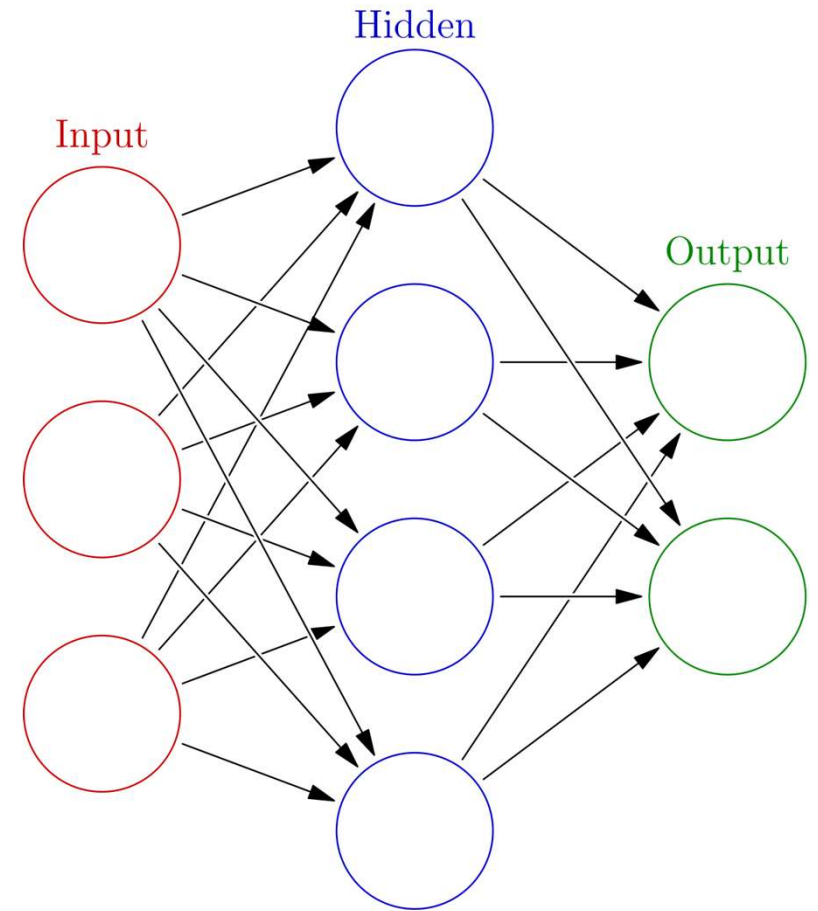
Real-world applications of AI in different industries



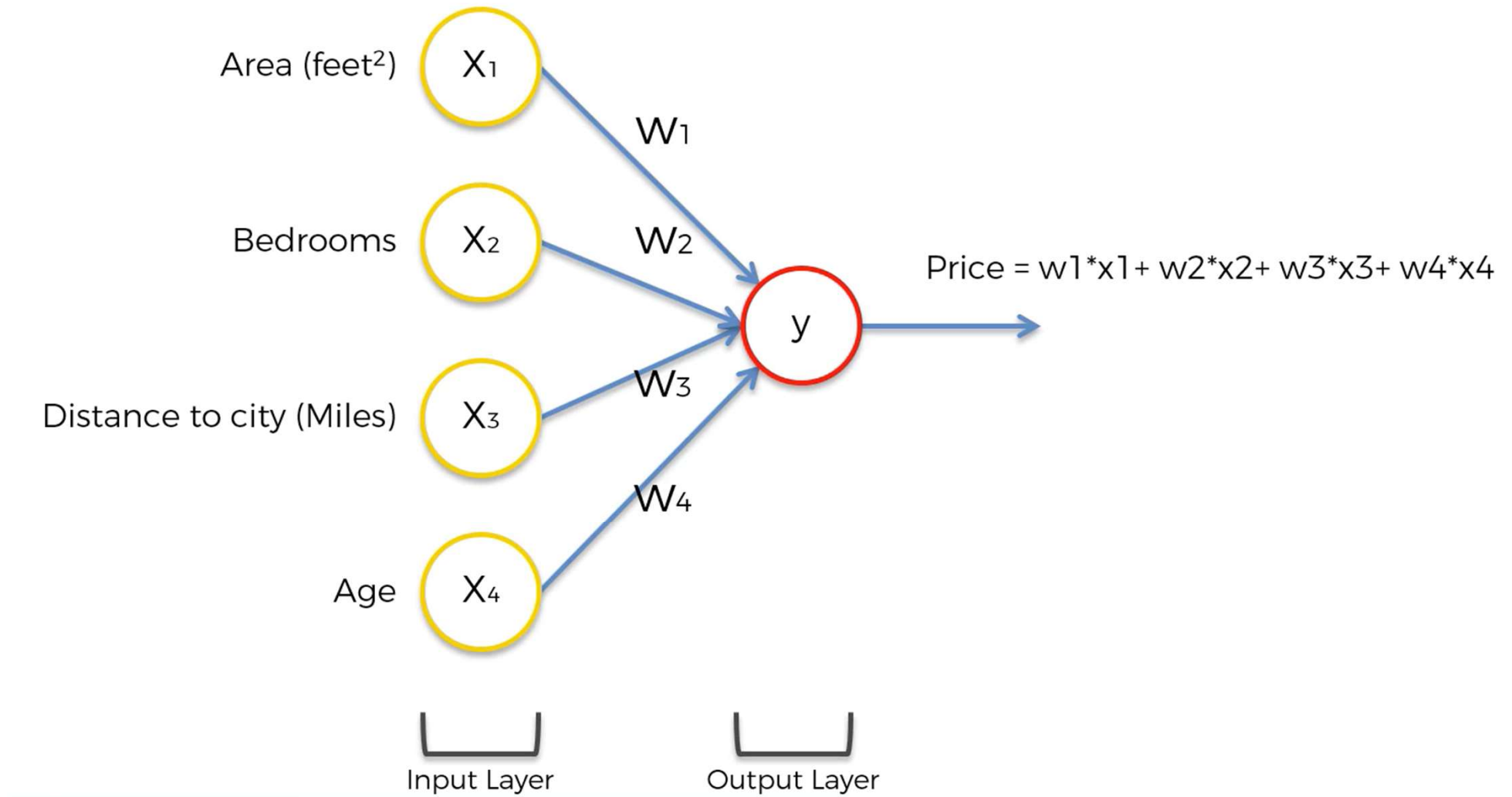
Introduction to Deep Learning



Neural networks

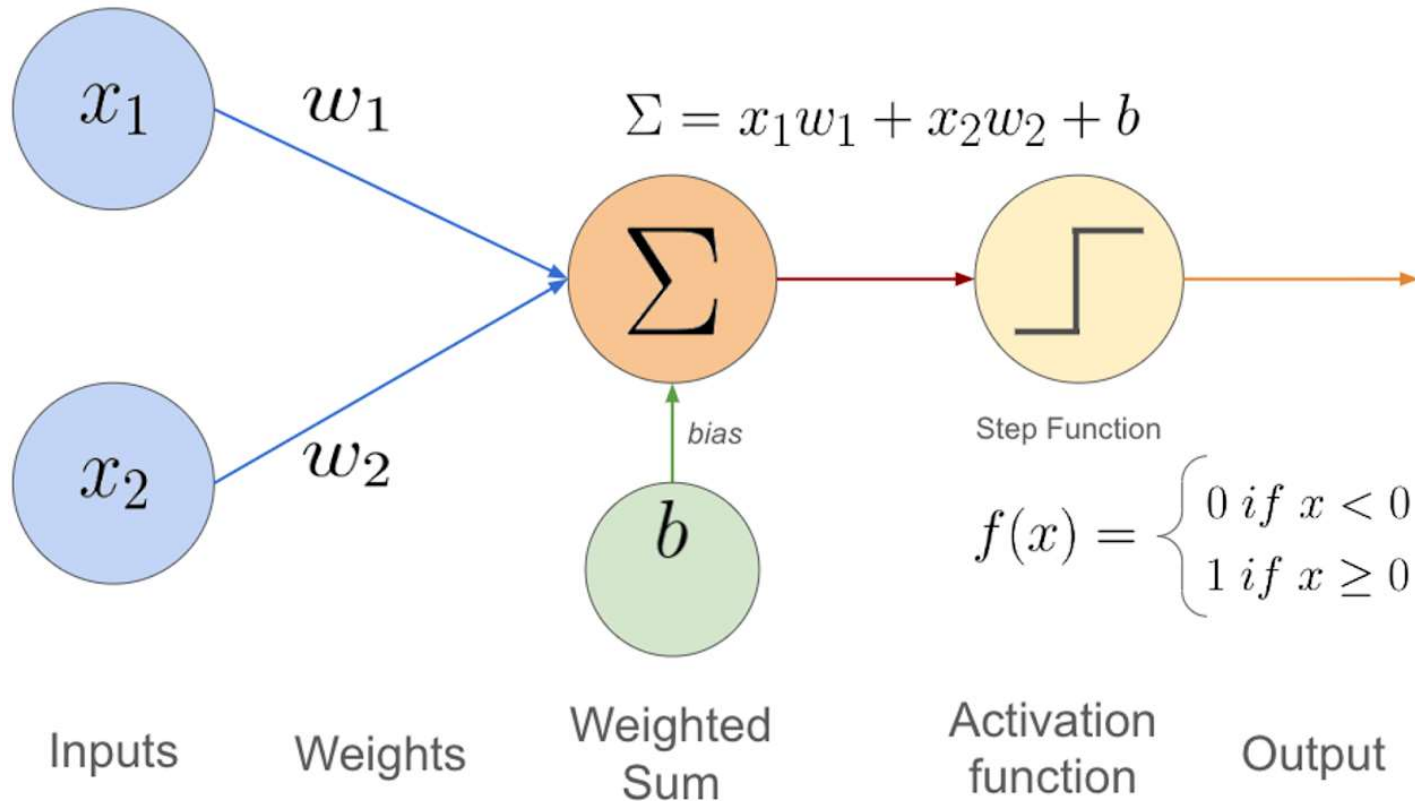


Basics of NN

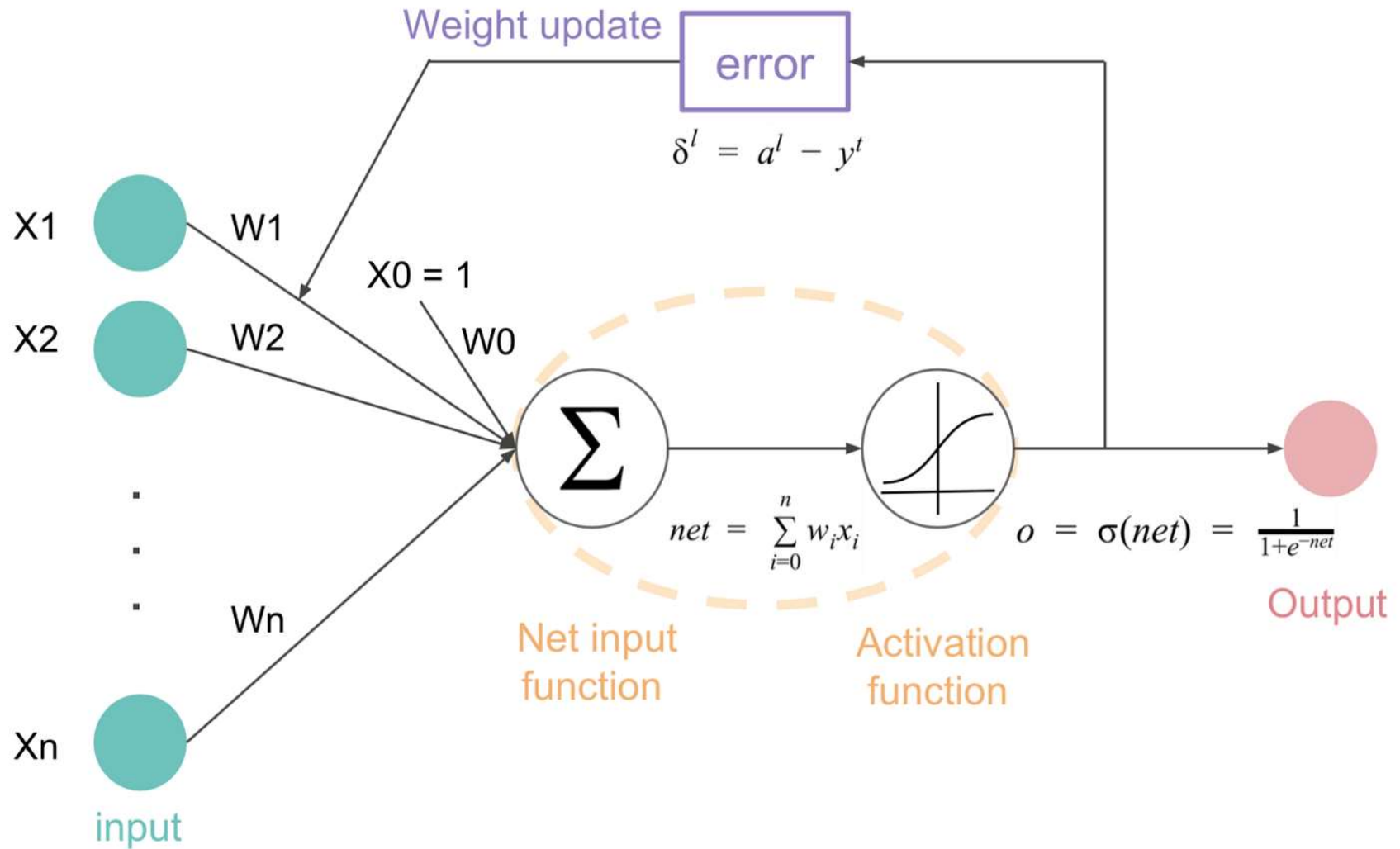


Perceptron and Activation Function

- A perceptron is the simplest artificial neural network, acting as a single neuron that makes a binary decision by classifying data into one of two categories.



Loss functions



Optimization techniques

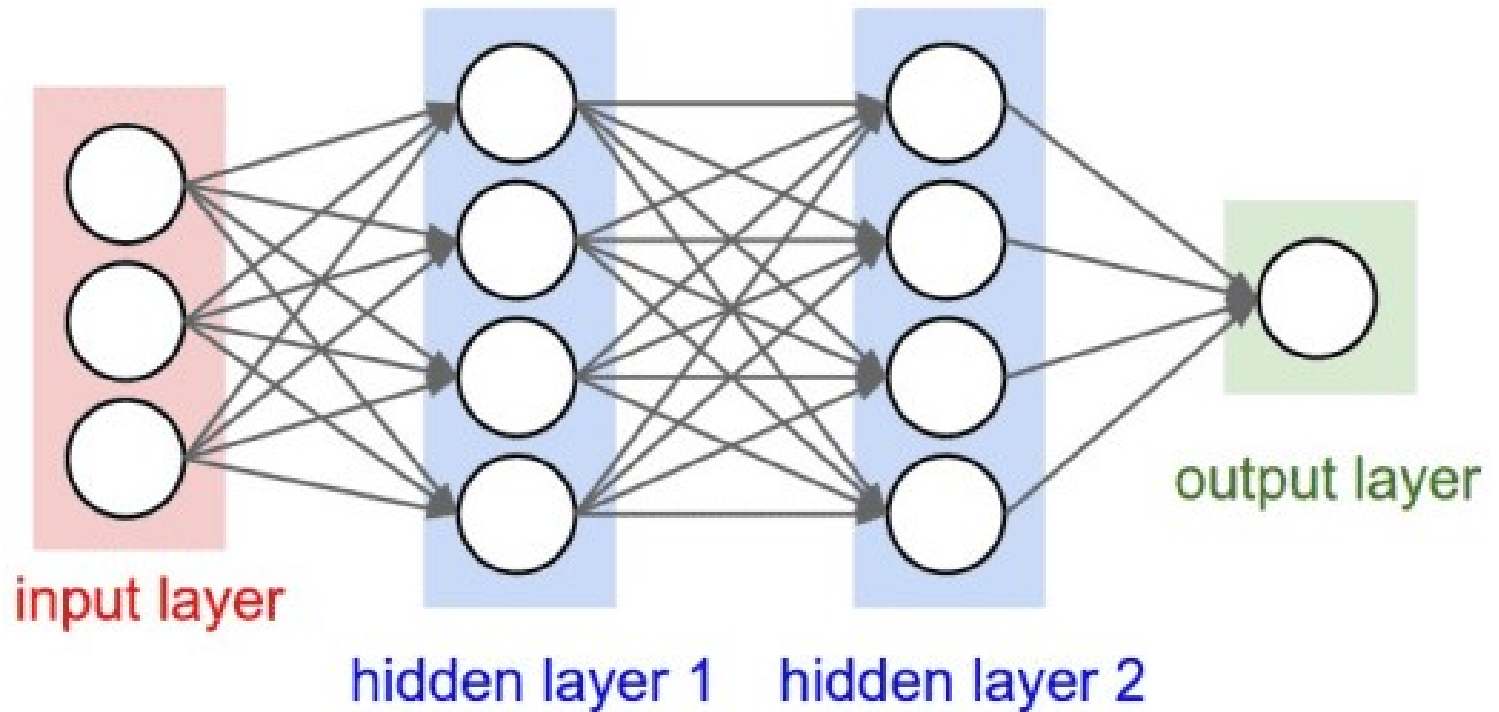
- Methods used to adjust a model's parameters, like weights and biases to:
 - Minimize the loss function
 - Improve training speed and performance
- Algorithms
 - SGD (Stochastic Gradient Descent)
 - Adam (Adaptive Moment Estimation)

Feedforward vs. convolutional vs. recurrent networks

- Feedforward networks process basic data
- CNNs is for data like images, and
- RNNs use internal memory for sequential data like text.

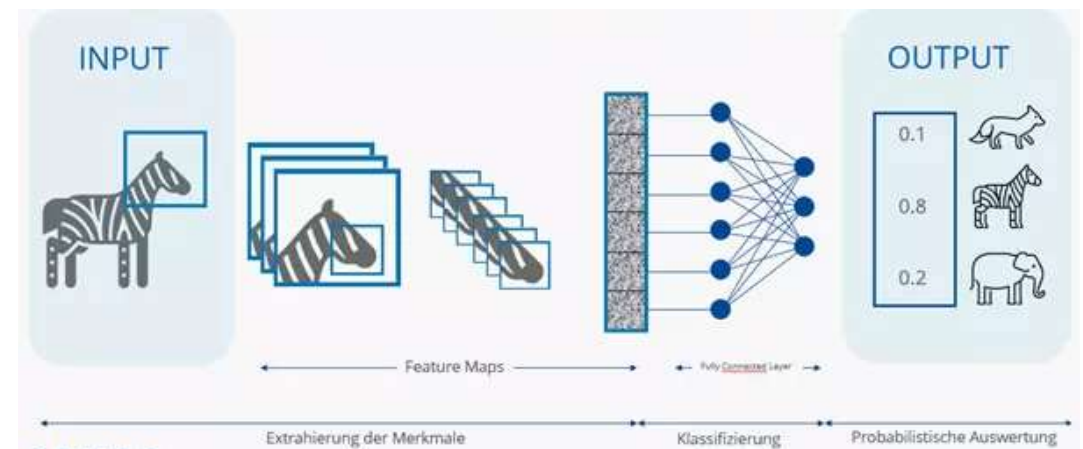
Feedforward networks

- One-Way Information Flow
- No Memory



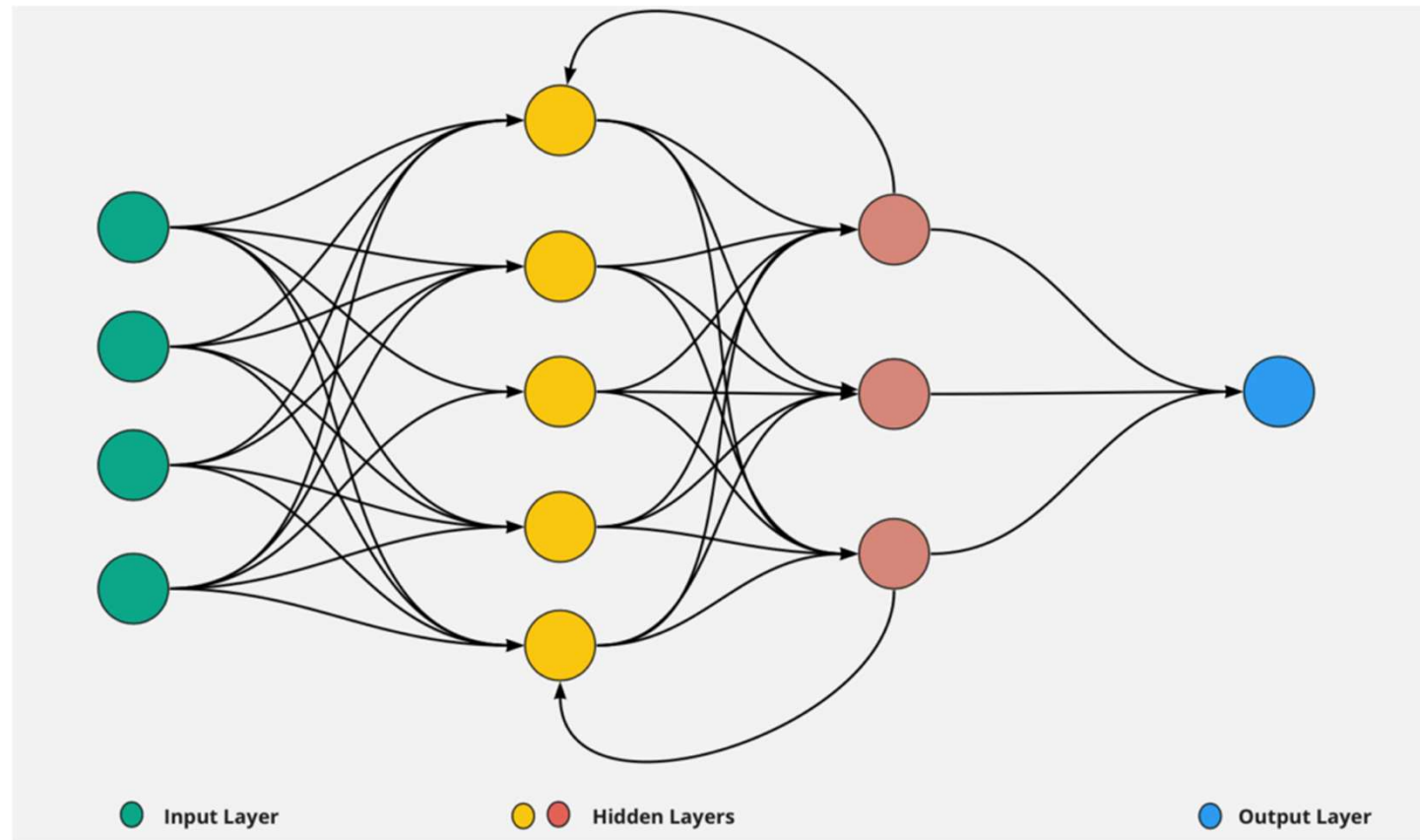
Convolutional networks

- Image Classification
- Object Detection
- Image Segmentation
 - Classifying every pixel in an image to a specific category
- Facial Recognition and Medical Image Analysis



Recurrent networks

- Handle sequential data
- Use a feedback loop
- Use Cases
 - NLP
 - Speech Recognition
 - Time-Series Forecasting



Thanks