Artificial Intelligence (AI)

A-Level Computer Science · Vocabulary in context

Word	Example
artificial intelligence /ˌɑːtɪˈfɪʃl ɪnˈtelɪdʒəns/	**Artificial intelligence** lets computers do tasks that need thinking.
machine learning /məˈʃiːn ˈlɜːnɪŋ/	**Machine learning** lets a computer learn from examples.
deep learning /diːp ˈlɜːnɪŋ/	**Deep learning** can recognise faces.
neural networks /ˈnjuːrəl ˈnetwɜːks/	**Neural networks** are made of many connected units.
humanoid robot /ˈhjuːmənɔɪd ˈrəʊbɒt/	A **humanoid robot** has arms, legs and a head.
graph /græf/	A **graph** has nodes joined by edges.
nodes /nəʊdz/	The cities are the **nodes** of the graph.
edges /ˈedʒɪz/	The roads are the **edges** of the graph.
minimax /ˈmɪnɪmæks/	**Minimax** helps a computer choose the best move in a game.
semantic network /səˈmæntɪk ˈnetwɜːk/	A **semantic network** shows how ideas link.
knowledge graph /ˈnɒlɪdʒ græf/	A **knowledge graph** stores facts as linked nodes.
breadth-first search /bredθ fɜːst sɜːtʃ/	**Breadth-first search** visits all nearby nodes first.

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depth-first search /depθ fɜːst sɜːtʃ/	**Depth-first search** goes as deep as it can first.
weight /weɪt/	The **weight** on the edge is the distance.
heuristic /hjuːˈrɪstɪk/	A **heuristic** is a good guess that saves time.
labels /ˈleɪblz/	The photos have **labels** such as “cat” and “dog”. ”cat” ”dog”
artificial neuron /ˌɑːtɪˈfɪʃl ˈnjuːrɒn/	An **artificial neuron** adds its inputs and gives one output.
bias term /ˈbaɪəs tɜːm/	The **bias term** moves the output up or down.
activation function /ˌæktɪˈveɪʃn ˈfʌŋkʃn/	The **activation function** decides the neuron’s output.
hidden layers /ˈhɪdn ˈleɪəz/	**Hidden layers** sit between the input and the output.
deep neural network /diːp ˈnjuːrəl ˈnetwɜːk/	A **deep neural network** has many hidden layers.
image recognition /ˈɪmɪdʒ ˌrekəgˈnɪʃn/	**Image recognition** finds faces in photos.
speech recognition /spiːtʃ ˌrekəgˈnɪʃn/	**Speech recognition** turns your voice into text.
machine translation /məˈʃiːn trænˈsleɪʃn/	**Machine translation** turns English into Chinese.
reinforcement learning /ˌriːɪnˈfɔːsmənt ˈlɜːnɪŋ/	In **reinforcement learning**, the program learns from rewards.

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supervised learning /ˈsuːpəvaɪzd ˈlɜːnɪŋ/	In **supervised learning**, the training data has labels.
classification /ˌklæsɪfɪˈkeɪʃn/	**Classification** sorts emails into spam and not spam.
regression /rɪˈgreʃn/	**Regression** predicts a number, such as a house price.
unsupervised learning /ʌnˈsuːpəvaɪzd ˈlɜːnɪŋ/	In **unsupervised learning**, the data has no labels.
cluster /ˈklʌstə/	Similar customers form a **cluster**.
training data /ˈtreɪnɪŋ ˈdeɪtə/	The program learns from **training data**.
learning rate /ˈlɜːnɪŋ reɪt/	A small **learning rate** means small steps.
self-driving car /self ˈdraɪvɪŋ kɑː/	A **self-driving car** uses cameras and sensors.
agent /ˈeɪdʒənt/	The **agent** learns by trying actions.
reward /rɪˈwɔːd/	The program gets a **reward** for a good move.
policy /ˈpɒlɪsi/	The **policy** tells the agent what to do.
lidar /ˈlaɪdɑː/	**Lidar** measures distance with laser light.
backpropagation /ˌbækprəpəˈgeɪʃn/	**Backpropagation** changes the weights to reduce the error.
gradient descent /ˈgreɪdɪənt dɪˈsent/	**Gradient descent** takes small steps downhill to reduce the error.

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Word	Example
loss function /lɒs ˈfʌŋkʃn/	The **loss function** measures how wrong the answer is.
epochs /ˈiːpɒks/	The network trained for ten **epochs**.
linear regression /ˈlɪnɪə rɪˈgreʃn/	**Linear regression** fits a straight line to the data.
optical character recognition /ˈɒptɪkl ˈkærɪktə ˌrekəgˈnɪʃn/	**Optical character recognition** reads text from a photo.
text-to-speech /tekst tə spiːtʃ/	**Text-to-speech** reads the words aloud.

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