Automated and emerging technologies

IGCSE Computer Science · Vocabulary in context

Word	Example
automated system /ˈɔːtəmeɪtɪd ˈsɪstəm/	An **automated system** works without people controlling it.
environment /enˈvaɪrənmənt/	Robots can work in a dangerous **environment**, such as a nuclear plant.
human intervention /ˈhjuːmən ˌɪntəˈvenʃn/	The machine works with no **human intervention**.
greenhouse /ˈgriːnhaʊs/	The **greenhouse** opens its windows when it gets too hot.
car park barrier /kɑː pɑːk ˈbærɪə/	The **car park barrier** lifts when a car arrives.
sensor /ˈsensə/	A light **sensor** turns on the street lamp at night.
microprocessor /ˌmaɪkrəʊˈprəʊsesə/	A **microprocessor** is a CPU on a single chip.
actuator /ˈæktʃuːeɪtə/	A motor is an **actuator**: it moves the robot's arm.
stored values /stɔːd ˈvæljuːz/	The sensor reading is compared with **stored values**.
sensor types /ˈsensə taɪps/	Different **sensor types** measure heat, light or pressure.
accelerometer /əkˌselәˈrɒmɪtə/	The phone's **accelerometer** knows when you shake it.
humidity /hjuːˈmɪdɪti/	High **humidity** slows transpiration.
proximity /prɒkˈsɪmɪti/	A **proximity** sensor detects when something is close.

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consistent /kənˈsɪstənt/	Robots give **consistent** results: every product is the same.
Robotics /rəʊˈbɒtɪks/	**Robotics** is the study and use of robots.
robots /ˈrəʊbɒts/	**Robots** build cars in many factories.
physical structure /ˈfɪzɪkl ˈstrʌktʃə/	A robot has a **physical structure** of metal parts.
electrical components /ɪˈlektrɪkl kəmˈpəʊnənts/	Motors and sensors are **electrical components**.
programmable instructions /ˈprəʊgrəməbl ɪnˈstrʌkʃnz/	A robot follows **programmable instructions**.
factory equipment /ˈfæktəri ɪˈkwɪpmənt/	Robot arms are common **factory equipment**.
domestic appliances /dəˈmestɪk əˈplaɪənsɪz/	Washing machines are **domestic appliances**.
vacuum cleaner /ˈvækjuːm ˈkliːnə/	A robot **vacuum cleaner** cleans the floor by itself.
lack of independent decision-making /læk ɒv ˌɪndɪˈpendənt dɪˈsɪʒn ˈmeɪkɪŋ/	One problem with robots is their **lack of independent decision-making**.
Artificial intelligence /ˌɑːtɪˈfɪʃl ɪnˈtelɪdʒəns/	**Artificial intelligence** lets computers do tasks that need thinking.
simulation /ˌsɪmjʊˈleɪʃn/	A **simulation** can model how traffic moves through a town.

Word	Example
rules /ruːlz/	The program follows **rules** to make a decision.
reason /ˈriːzn/	An AI system can **reason** from facts to new facts.
draw conclusions /drɔː kənˈkluːʒnz/	The system can **draw conclusions** from the data.
approximate /əˈprɒksɪmət/	The answer is **approximate**: it is close, but not exact.
definite /ˈdefɪnət/	The answer is **definite**: it is certain.
learn /lɜːn/	A machine learning program can **learn** from data.
adapt /əˈdæpt/	AI can **adapt** to new situations.
expert systems /ˈekspɜːt ˈsɪstəmz/	**Expert systems** give advice like a human expert.
natural language processing /ˈnætʃərəl ˈlæŋgwɪdʒ ˈprəʊsesɪŋ/	**Natural language processing** lets computers understand speech and text.
self-driving cars /self ˈdraɪvɪŋ kɑːz/	**Self-driving cars** use sensors and AI.
knowledge base /ˈnɒlɪdʒ beɪs/	The **knowledge base** stores facts.
rule base /ruːl beɪs/	The **rule base** stores IF–THEN rules. IF–THEN
inference engine /ˈɪnfərəns ˈendʒɪn/	The **inference engine** uses the rules to reach an answer.
user interface /ˈjuːzə ˈɪntəfeɪs/	The **user interface** is the screen you use to control the program.

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Word	Example
Machine learning /məˈʃiːn ˈlɜːnɪŋ/	**Machine learning** lets a computer improve from examples.
narrow AI /ˈnærəʊ ˌeɪ ˈaɪ/	**Narrow AI** does only one task well.
general AI /ˈdʒenərəl ˌeɪ ˈaɪ/	**General AI** could do any task a human can.
strong AI /strɒŋ ˌeɪ ˈaɪ/	**Strong AI** would think like a person.
central heating /ˈsentrəl ˈhiːtɪŋ/	The **central heating** turns on when the room is cold.
chemical process /ˈkemɪkl ˈprəʊses/	Sensors watch the temperature in a **chemical process**.
agriculture /ˈægrɪkʌltʃə/	Drones help in **agriculture** by checking crops.
mechanical /mɪˈkænɪkl/	A robot arm is a **mechanical** device.