Module 7 Automation

Unit 17 What Is Robotics?

▶ Artificial Intelligence

Artificial intelligence is the branch of computer science concerned with making computers behave and act like humans.

Examples of artificial intelligence (AI) have been around for some time now. Early examples include chess-playing programs able to analyse millions of possible alternative scenarios in order to make a move. Tasks we find easy to accomplish, sometimes require significant computer processing power.. For example, relatively simple things like recognising people and objects require complex algorithms for a computer program to complete.

Expert systems or intelligent knowledge-based systems are examples of artificial intelligence and can perform in certain areas at a level similar to human experts. There are numerous examples where AI is used on a daily basis including:

- credit card checking that looks for unusual patterns in credit card use to identify potential fraudulent use;
- speech recognition systems that identify key words and patterns in the spoken word to interpret the meaning;
- medical diagnosis systems used to diagnose illness from the symptoms and to support medical staff in making diagnoses;
- control systems that monitor, interpret and predict events to provide real-time process control, for example in chemical plants.

All of these systems have a similar structure:

- a knowledge base, which holds the collected expert knowledge;
- an inference engine that searches the knowledge base to find potential responses to questions;
- an interface to connect with the user or to a system it is controlling.

Intelligence is more than pattern recognition; there are other aspects that define what we know as intelligence, including creativity and social intelligence and our ability to interact with other human beings.

(Adapted from George Rouse and Sean O'Byrne, *OCR GCSE Computer Science*, Hodder Education, 2016)

❖ Understanding the text

1. **Find ten verbs in the text that are associated with artificial intelligence. One has been done as an example.**

1. analyse
2. ....
3. ....
4. ....
5. ....
6. ....
7. ....
8. ....
9. ....

2. **Fill in the grid with the appropriate information.**

Examples of artificial intelligence	Function
....	
....	
....	
....	

3. **Write the components of the systems mentioned in the text.**

1. ....
2. ....
3. ....

❖ Writing

4. **Imagine you have been asked to create an intelligent knowledge-base system. Write a short description of your system. Focus on the following elements and use some of the verbs from exercise 1.**

- Function

  ....
  ....

- Components

  ....
  ....

- Target market (e.g. teenagers, disabled etc.)

  ....
  ....