

## AI Disclaimer

Any factual information within this resource is accurate and based on current research as of May 2023. Any assumptions made in the analysis of this resource are not reflective of the position of Twinkl in relation to AI. Twinkl neither endorses nor is affiliated with any AI system referred to in this resource. AI systems are only as good as the data they are trained on and are vulnerable to bias and can provide incorrect information, therefore human editing is always advised. In order to ensure privacy is maintained, personal and sensitive data must not be entered into AI tools. Twinkl cannot be held responsible for the use of external AI tools; protecting children from harmful content online, including that generated by AI, should be of the utmost importance. As always, please ensure you check the suggested age-rating for any AI tools you choose to use.

# All About Artificial Intelligence (AI)



Artificial intelligence (AI) technology, such as streaming services and chatbots are used by people around the world every day.

## What Is AI?

AI is a computer, robot or machine's ability to learn and have human-like intelligence. AI uses the information and instructions it is given to solve problems, make predictions and learn.



## The History of AI

In 1948, British mathematician Alan Turing wrote about his idea of an intelligent machine that could use its unlimited memory and given information to decode and follow a set of instructions.

After a few years, computers and technology had improved enough that Christopher Strachey was able to write one of the first AI programs in 1951. In 1955, scientist John McCarthy created the name 'artificial intelligence'. In 1956, Allen Newell, John Clifford Shaw and Herbert Simon wrote Logic Theorist, viewed by some as the first program to solve problems with human-like intelligence.

As time went on, knowledge of computers, AI and technology grew. In 1997, an AI computer named Deep Blue won a chess game against the reigning world chess champion, Gary Kasparov. In 2016, Hanson Robotics built Sophia, an advanced humanoid robot.

## Did You Know...?

Many smartphones use AI for face ID security.

## AI Today

Currently, AI is used worldwide and in numerous ways. Streaming services, such as Netflix and YouTube, use AI to recommend shows to users based on what is popular on their platforms. Virtual assistants, such as Alexa, use AI to answer questions and complete tasks.





Other uses of AI include smart home devices, such as thermostats and doorbells, adverts tailored to your online searches and search history. Search engines use AI to search for information and rank results in order of importance.

AI is also helping doctors to scan X-rays, perform operations and diagnose patients. Additionally, astronomers use AI in telescopes to find new objects outside of our solar system.

## Advantages and Disadvantages of AI

AI technology can work non-stop and is less likely to make calculation errors or mistakes. In addition, AI can often solve problems quickly and can be programmed to do repetitive tasks easily without interruption. AI robots can perform tasks that would be dangerous for humans, such as ocean or space exploration.

However, there are some potential disadvantages to AI. Technology can break and malfunction and it can be expensive to develop and maintain. Additionally, AI only knows what it has previously been shown. Although AI has human-like intelligence, it cannot copy or understand human emotion.



## How Is AI Evolving?

Most current AI is referred to as **narrow or weak AI**. In the future, advancements in **strong AI** will strive to make technology that can react to certain situations by using sensors to detect smells, taste, touch and sound.

AI is a fast-developing technology. It is appearing more frequently in our everyday lives, so it is important to keep ourselves safe when we use it.



## Glossary

**narrow or weak AI:** Machines or robots that can only perform the task they are programmed to do.

**strong AI:** Machines or robots that can understand and learn advanced tasks.



# Questions

1. According to the text, how do astronomers use AI? Tick one.

- ☐ AI translates radio signals from space.
- ☐ AI controls rockets when they travel into space.
- ☐ AI in telescopes finds new objects outside our solar system.
- ☐ AI scans for life on other planets.

2. What is one disadvantage of AI mentioned in the text? Tick one.

- ☐ pollution
- ☐ expensive to maintain
- ☐ climate change
- ☐ endangering animals

3. What do doctors use AI for?

---

4. Look at the section called **The History of AI**.

Find and copy one word that means the same as 'understanding' or 'comprehension'.

---

5. Fill in the missing words.

Currently, AI is used \_\_\_\_\_ and in \_\_\_\_\_ ways.

6. Summarise what you have learnt about AI in 25 words or fewer.

---

---

---

7. What is your favourite fact about AI? Explain your answer.

---

---

---

8. If you were able to ask Alan Turing a question, what would it be and why?

---

---

---

1. According to the text, how do astronomers use AI? Tick one.

- ☐ AI translates radio signals from space.
- ☐ AI controls rockets when they travel into space.
- ☒ **AI in telescopes finds new objects outside our solar system.**
- ☐ AI scans for life on other planets.

2. What is one disadvantage of AI mentioned in the text? Tick one.

- ☐ pollution
- ☒ **expensive to maintain**
- ☐ climate change
- ☐ endangering animals

3. What do doctors use AI for?

**AI helps doctors to scan X-rays, perform operations and diagnose patients.**

4. Look at the section called **The History of AI**.

Find and copy one word that means the same as 'understanding' or 'comprehension'.

**knowledge**

5. Fill in the missing words.

Currently, AI is used **worldwide** and in **numerous** ways.

6. Summarise what you have learnt about AI in 25 words or fewer.

**Pupils' own responses, such as: AI is any technology, such as computers or robots, that can think and learn. It is used everywhere for things like phones and in the practice of medicine.**

7. What is your favourite fact about AI? Explain your answer.

**Pupils' own responses, such as: I liked learning about how doctors are using AI. It is interesting that they are now operating and diagnosing patients. Since there is less chance of an AI making a mistake, surgeries should be less dangerous.**

8. If you were able to ask Alan Turing a question, what would it be and why?

**Pupils' own responses, such as: I would like to ask Alan Turing where he got his idea of an intelligent machine from and how he imagined it would be in the future.**

# All About Artificial Intelligence (AI)



Unknowingly, people around the world use various forms of artificial intelligence (AI) every day. AI technology, such as streaming services and chatbots, has become more commonplace in our society.

## What Is AI?

AI is any machine, such as a robot or computer, that has been designed to have human-like intelligence. AI uses given data and initial instructions to make predictions, solve advanced calculations or problems and learn from the information they receive.



## The History of AI

British mathematician Alan Turing wrote about an idea he had for an intelligent machine in 1948. His machine would have endless memory so it could be given information and use it to learn or decode and perform a set of instructions. Most modern computers somewhat fit his description of a Turing machine. The only difference is that computers of today still have limited memory.

At the time when Turing was writing, technology was not as advanced as he envisioned. Most computers were very expensive and lacked the memory needed to perform like a Turing machine. As the 20th century progressed, computers and technology improved and were soon able to work intelligently. In 1951, Christopher Strachey wrote one of the first AI programs where a computer was able to complete a game of draughts. In 1956, a program called Logic Theorist was designed by Allen Newell, John Clifford Shaw and Herbert Simon to imitate human-like intelligence to solve problems.

Throughout the second half of the 20th century, understanding of computers, AI and technology grew. In 1997, an AI computer named Deep Blue won a chess game against the reigning world chess champion, Gary Kasparov. In 2016, Hanson Robotics built its most advanced humanoid robot called Sophia.



## AI Today

Presently, AI is used all over the world and in many different ways. Streaming services, such as Netflix and YouTube, use AI to recommend shows to users based on what other viewers are watching already. Virtual assistants, such as Alexa, use AI to answer questions and complete tasks. Many smartphones use AI for face ID security.

Other uses of AI include smart home devices, such as thermostats and doorbells, adverts tailored to your online searches and search history. Search engines use AI to search quickly for information and rank results in order of relevance.

AI is also helping doctors to scan X-rays, perform operations and diagnose patients. On top of that, astronomers use AI to scan our universe and find new objects outside of our solar system.



## Advantages and Disadvantages of AI

AI technology can work non-stop and is unlikely to make calculation errors or mistakes. In addition, AI can solve problems quickly and be programmed to do things repetitively without interruption. AI robots can perform tasks that would be dangerous for humans, such as ocean or space exploration.

However, there are some potential disadvantages to AI. Technology which uses AI can be extremely expensive to build, operate and develop and can even break or malfunction. Additionally, AI only knows what it has previously been shown. Although it has human-like intelligence, AI cannot copy or understand human emotion.



## How Is AI Evolving?

Most current AI is referred to as narrow or weak AI (machines or robots that can only perform the task they are programmed to do). In the future, advancements in strong AI (machines or robots that can understand and learn advanced tasks) might enable machines to understand in a more human-like way, reacting to certain situations by using sensors to detect smells, taste, touch and sound.

AI is a fast-developing technology. It is appearing more frequently in our everyday lives, so it is important to keep ourselves safe when we use it.



# Questions

1. According to the text, how do smartphones use AI? Tick one.

- ☐ to stream shows
- ☐ to scan patients
- ☐ find our location
- ☐ face ID technology

2. Draw **four** lines and match each name to its description.

Alan Turing

• He wrote one of the first AI programs.

Christopher Strachey

• He co-designed Logic Theorist.

Herbert Simon

• He wrote about an idea he had for an intelligent machine.

Gary Kasparov

• He was defeated in a chess game by an AI computer.

3. Who created Sophia?

---

4. Fill in the missing words.

AI is any \_\_\_\_\_, such as a robot or computer, that has been \_\_\_\_\_ to have human-like intelligence.

5. Look at the section called **History of AI**.

Find and copy one word that means the same as 'pictured' or 'imagined'.

---

6. Would you like to go back in time and see the first computers? Explain your answer.

---



---



---

7. What surprised you the most about AI? Explain your answer.

---



---



---

8. Would you like to meet Sophia? Explain your answer.

---

---

---

9. What game would you like to see a computer play next? Explain your answer.

---

---

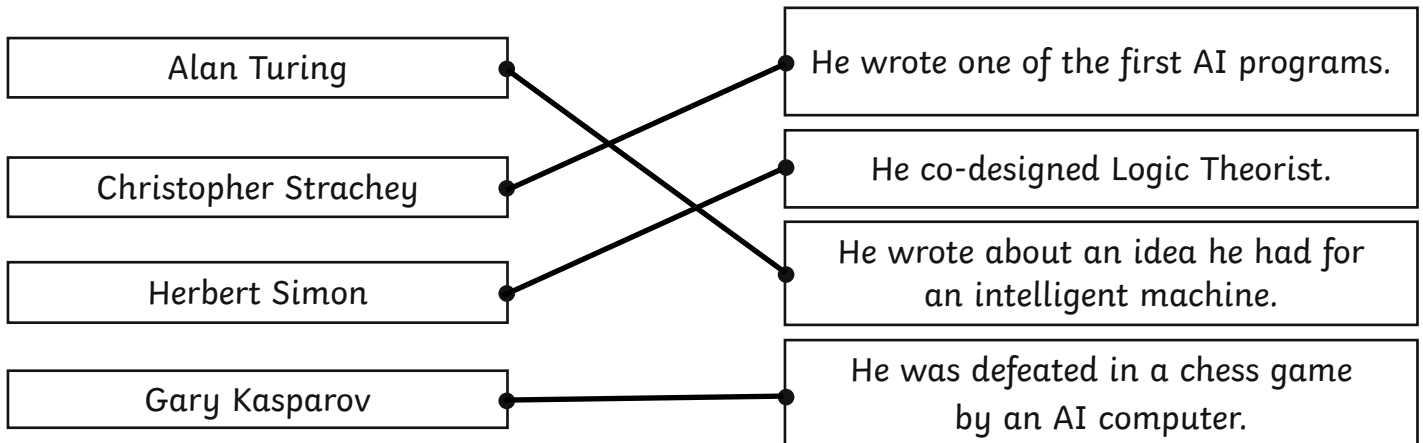
---

# Answers

1. According to the text, how do smartphones use AI? Tick one.

- ☐ to stream shows
- ☐ to scan patients
- ☐ find our location
- ☒ **face ID technology**

2. Draw **four** lines and match each name to its description.



3. Who created Sophia?

**Hanson Robotics created Sophia.**

4. Fill in the missing words.

AI is any **machine**, such as a robot or computer, that has been **designed** to have human-like intelligence.

5. Look at the section called **History of AI**.

Find and copy one word that means the same as, 'pictured' or 'imagined'.

**envisioned**

6. Would you like to go back in time and see the first computers? Explain your answer.

**Pupils' own responses, such as: Yes, I think it would be interesting to see how different they are in appearance and to also compare the technology and abilities. I'd like to see what has stayed the same and what has changed.**

7. What surprised you the most about AI? Explain your answer.

**Pupils' own responses, such as: I think what surprised me the most was how long it has been around. I thought of it as a more recent invention but it has been around since the late 1940s and early 1950s.**

8. Would you like to meet Sophia? Explain your answer.

**Pupils' own responses, such as: Yes, I think I would like to meet Sophia. I would like to see how realistic she is and what she is capable of.**

9. What game would you like to see a computer play next? Explain your answer.

**Pupils' own responses, such as: I think I would like to see a computer play a game like Minecraft. It would be interesting to see what they build inside their world and how they fend off the monsters as they do it.**

# All About Artificial Intelligence (AI)



Without realising it, people all over the world use various forms of artificial intelligence (AI) technology daily. From streaming services to exploration robots, AI has become more prevalent in our everyday lives and jobs.

## What Is AI?

AI refers to technology that can make computers learn and sometimes have human-like intelligence. Taking it a step further, AI consists of machines, such as robots and computers, that have been designed to use given data and initial instructions to make predictions, solve advanced calculations or problems and learn from the information they receive.



## The History of AI

In 1948, British mathematician Alan Turing wrote about an idea he had regarding an intelligent machine with unlimited memory that could be given a set of data, scan that data and use it to learn and decode and perform a set of instructions. Today, most modern computers loosely fall under this description of a Turing machine: the only significant difference is the limited size of a real computer's memory.

Unfortunately, technology of Turing's time was expensive and computers didn't have the memory to complete complex equation processing (using instructions within the computer to analyse information and perform tasks). Over time, progress in memory and processing capabilities as well as programming languages improved, enabling computers to work more intelligently. In 1951, Christopher Strachey wrote one of the first AI programs which involved a computer playing a complete game of draughts. A few years later, Logic Theorist, a program designed to emulate human-like problem solving skills, was designed by Allen Newell, John Clifford Shaw and Herbert Simon in 1956.

From the 1950s onward, computers and technology improved and expanded until a landmark event occurred: an AI computer named Deep Blue defeated Gary Kasparov, who was the reigning world chess champion, in a chess game in 1997. Since then, the field of AI has grown and evolved at a rapid pace. In 2016, Hanson Robotics built its most advanced humanoid robot called Sophia. She has appeared on many TV shows and was declared the world's first robot citizen.



## AI Today

Today, AI is used across the globe and in a variety of ways. Streaming services, such as Netflix and YouTube, use AI to make viewing recommendations based on what viewers are watching already. Virtual assistants, such as Alexa, use AI to answer questions, give information and complete requested tasks.

Many smartphones use AI for face ID security and most cars of today have a GPS system that uses AI.

Other uses of AI include smart home devices, such as thermostats and doorbells, adverts tailored to your online searches and search history. Search engines also use AI to search efficiently for information and rank results in order of relevance.

In the field of medicine, AI is helping doctors to scan X-rays, perform operations and diagnose patients. Astronomers use AI to scan our universe and find heavenly bodies, such as exoplanets (planets outside our solar system).

## Advantages and Disadvantages of AI

AI technology is tireless and can be available at all times. AI is less likely to make calculation errors or mistakes. In addition, AI can solve problems efficiently and quickly and can be programmed to do it repeatedly without interruption. AI robots can also perform dangerous tasks, such as ocean or space exploration, without risking human life.

However, there are some potential disadvantages to AI. Technology which uses AI can be extremely expensive to build, operate and develop and can even break or malfunction. Additionally, AI only knows what it has previously been shown. Although it has human-like intelligence, AI cannot copy or understand human emotion.

## How Is AI Evolving?

While most current AI is referred to as narrow or weak AI (machines or robots that can only perform the task they are programmed to do), in the future, advancements in strong AI (machines or robots that can understand and learn advanced tasks) will strive to make technology even more advanced. Scientists want the machines to react to certain situations by using sensors to detect smells, taste, touch and sound. AI is a fast-developing and constantly evolving technology. It is appearing more frequently in our everyday lives, so it is important to keep ourselves safe when we use it.

# Questions

1. What was the name of the program that was able to win a game of chess? Tick one.

- ☐ Turing Machine  
☐ Deep Blue  
☐ Logic Theorist  
☐ Sophia

2. Draw **four** lines and match each year to its event.

|      |                                                                              |
|------|------------------------------------------------------------------------------|
| 2016 | An AI program on a computer completed a game of draughts.                    |
| 1951 | An advanced humanoid robot named Sophia was created.                         |
| 1956 | Logic Theorist was designed.                                                 |
| 1997 | An AI program was able to defeat a champion chess player in a game of chess. |

3. Who is the world's first robot citizen?

---

4. Look at the first paragraph.

Find and copy one word that means the same as 'common' or 'widespread'.

---

5. Fill in the missing words.

Today, most modern computers loosely fall under this \_\_\_\_\_ of a Turing machine: the only \_\_\_\_\_ difference is the limited size of a real computer's memory.

6. Which type of AI do you think a GPS navigation system is? Explain your answer.

---



---



---

7. Can you think of something AI can't do at the moment? Explain your answer.

---

---

---

8. Would you like to play a game against a computer? Explain your answer.

---

---

---

9. What other uses of AI would you like to see in the future? Explain your answer.

---

---

---

10. Tick one box in each row to show whether each statement is **true** or **false**.

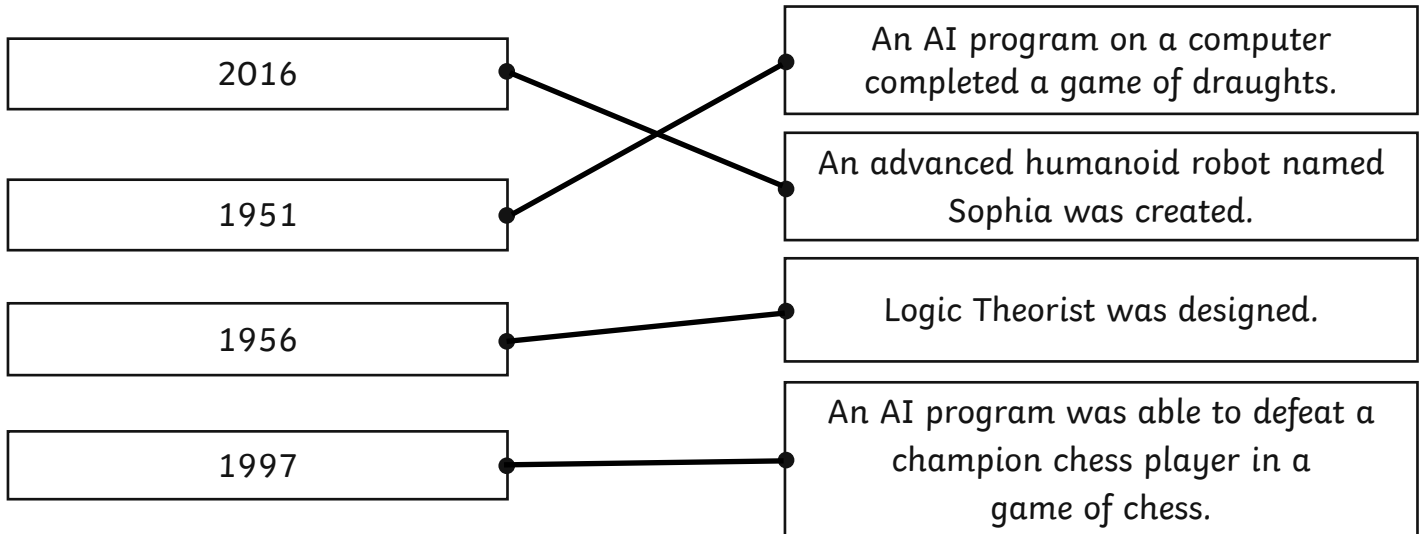
|                                                        | True | False |
|--------------------------------------------------------|------|-------|
| AI is only used in astronomy.                          |      |       |
| Most cars of today have GPS that uses AI.              |      |       |
| YouTube doesn't use AI.                                |      |       |
| Most current AI is referred to as strong AI.           |      |       |
| AI is used by shopping, banking and utility companies. |      |       |

# Answers

1. What was the name of the program that was able to win a game of chess? Tick one.

- ☐ Turing Machine  
☒ **Deep Blue**  
☐ Logic Theorist  
☐ Sophia

2. Draw **four** lines and match each year to its event.



3. Who is the world's first robot citizen?

**Sophia is the world's first robot citizen.**

4. Look at the first paragraph.

Find and copy one word that means the same as 'common' or 'widespread'.

**prevalent**

5. Fill in the missing words.

Today, most modern computers loosely fall under this **description** of a Turing machine: the only **significant** difference is the limited size of a real computer's memory.

6. Which type of AI do you think a GPS navigation system is? Explain your answer.

**Pupils' own responses, such as: I think a GPS system is considered weak AI because it can only perform the function it is programmed to do. It cannot do anything but plot a course.**

7. Can you think of something AI can't do at the moment? Explain your answer.

**Pupils' own responses, such as: I don't think AI can show emotion or preference.**

**For example, I don't think AI can have a favourite colour or describe how a sunset makes it feel because it can only perform tasks and think intelligently. They can't feel like a human.**

8. Would you like to play a game against a computer? Explain your answer.

**Pupils' own responses, such as: No, because they probably have every move in the game stored in their memory so can call upon these quickly and they are less likely to make a mistake in the game. I wouldn't stand a chance of winning.**

9. What other uses of AI would you like to see in the future? Explain your answer.

**Pupils' own responses, such as: I think I would like to see robots that can clean houses or cook so parents have more time to spend with their children.**

10. Tick one box in each row to show whether each statement is **true** or **false**.

|                                                        | True | False |
|--------------------------------------------------------|------|-------|
| AI is only used in astronomy.                          |      | ✓     |
| Most cars of today have GPS that uses AI.              | ✓    |       |
| YouTube doesn't use AI.                                |      | ✓     |
| Most current AI is referred to as strong AI.           |      | ✓     |
| AI is used by shopping, banking and utility companies. | ✓    |       |