British Science Week

# Artificial Intelligence (AI)
activity pack

Artificial Intelligence (AI)

Artificial Intelligence (AI) is a computer, or set of computer systems, that can perform tasks that would normally require a human's intelligence. These tasks include things like problem-solving, recognising patterns and learning from previous experiences.

One exciting aspect of AI is machine learning, where computers learn from data to improve their decision making over time. For example, you could teach a computer to recognise cats in photos by showing it lots of pictures of cats. As the computer looks at more data (pictures of cats), it becomes better at identifying cats more accurately.

A good comparison for AI is with us humans…
- Just like when we were really young, we were taught what things were by those who looked after us. With AI, this is similar, because we load 'training data' into the computer to tell it what a cat looks like for example.
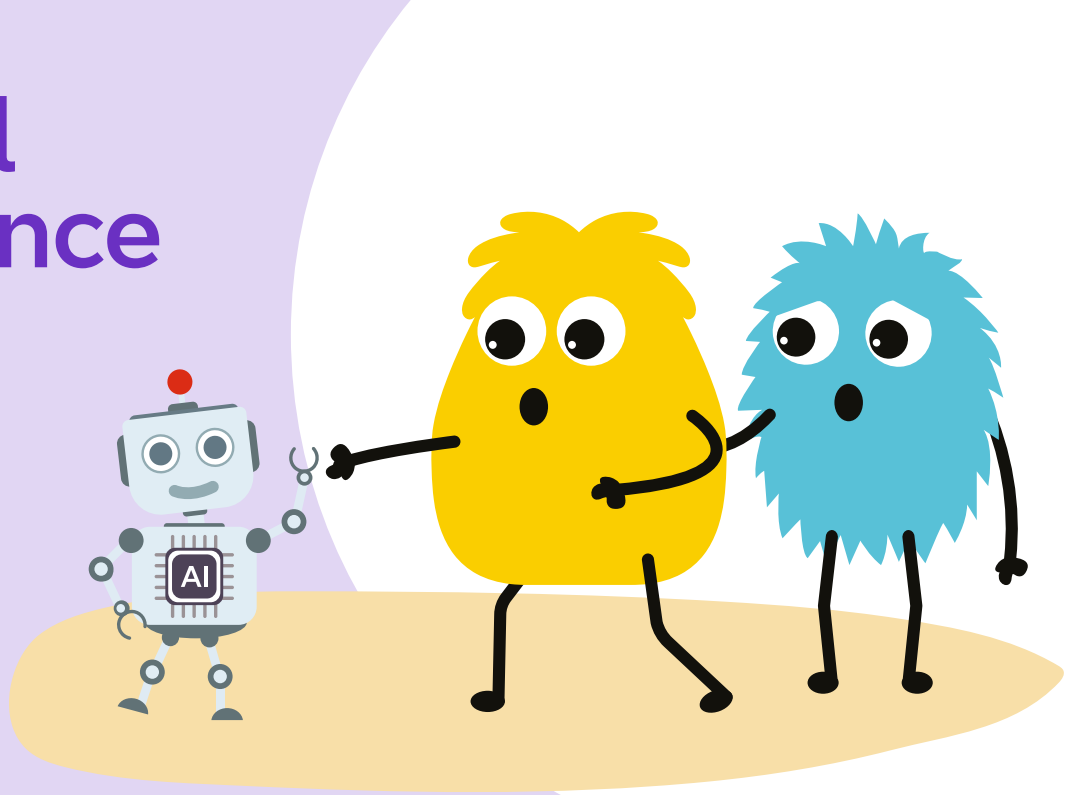
- As we grow up we start to learn things for ourselves, from our mistakes or from what we read. With AI, this is where machine learning comes in. The computer starts to get better at a certain task by looking at more and more data related to that topic.

AI is an exciting, fast moving subject area that has the potential to transform the way we live, work, or go to school. But what are the possible consequences of creating machines that can think and learn? How do we ensure that AI is used for the benefit of us humans only?

We'd love to see pictures of you all getting involved with the activities. Email these to us at **computerscience@bt.com** telling us which school you're from.

Or post it on social media and mention @adastralpark with the hashtag #BSW24.

Teacher Links

- Artificial Intelligence: level 1 from STEM Learning atadastral.co.uk/go/ait01
- Introduction to Machine Learning and AI course from the Raspberry Pi Foundation atadastral.co.uk/go/ait02

Find Out More

- Join Katie & Tex at TechSheCan to explore what Generative AI is atadastral.co.uk/go/aif01
- Hello World – Download your free issue all about Teaching & AI atadastral.co.uk/go/aif02
- Hello World – Download your free issue all about Machine Learning atadastral.co.uk/go/aif03

Have A Go

- Create an image identifier application atadastral.co.uk/go/aih01
- Train the computer to look for patterns in how your classmates get to school atadastral.co.uk/go/aih02
- Make a smart virtual classroom assistant atadastral.co.uk/go/aih03

Activity 1

Intelligent Piece of Paper

We're going to hold a competition for this activity!

Human Vs AI
**The human will be: YOU!**
The AI is called the Intelligent Piece of Paper.

Easy right? Well, let me tell you that the Intelligent Piece of Paper is unbeaten at the game of noughts and crosses! It hasn't lost a game yet. It has won roughly half the games it has played, and drawn the other half, but NEVER lost…

With confidence, it can be said that the Intelligent Piece of Paper is more intelligent than anyone in your classroom! Even smarter than your very, very intelligent teachers.

Do you believe it? If not, why don't you believe it? If you do believe it, what makes you think it's true?

Let's prove how intelligent the Intelligent Piece of Paper is.
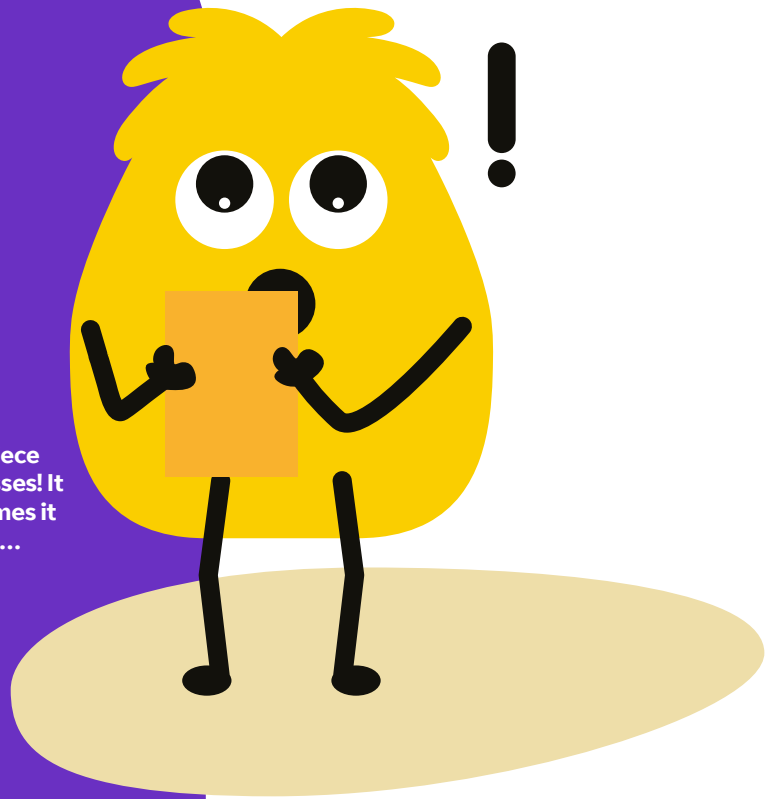
Kit List

Whiteboard (or any large surface to draw a 3x3 grid on)

Whiteboard Pen (or anything to write with on chosen surface)

Print out the Intelligent Piece of Paper on Page 4

Instructions

1   Draw a standard, 3x3, noughts and crosses grid on the whiteboard at the front of the room.

2   The teacher will pick two people to play the first game. Each player will need a whiteboard pen.
   •   One person will play on the side of the humans.
   •   One person will play on behalf of the AI. As the Intelligent Piece of Paper doesn't have arms and cannot write for itself, one person will have to play on behalf of it and do exactly as the Intelligent Piece of Paper says.

3   When it is the AI's turn, the person playing for the AI needs to read the instructions on the Intelligent Piece of Paper out loud and do exactly as it says.

4   The person playing on the side of the humans can go wherever they like on the grid to try and beat the AI.

5   The AI must always start the game.

6   Follow the instructions from the Intelligent Piece of Paper on page 4 and play the game of noughts and crosses, good luck!

7   Keep playing more games. Different people can represent the AI, but make sure everyone gets a go at trying to beat the Intelligent Piece of Paper.

Make a tally to record the number of wins for the humans, the number of wins for the AI and the number of draws overall.

What's written on the Intelligent Piece of Paper is really just a computer program. It consists of a set of instructions that have to be followed in a precise order to achieve a task. It's an algorithm, and computers run by following algorithms. Computers ultimately follow a set of instructions that the computer programmers have given them.

So it begs a bigger question… can something that just follows a set of rules really be called intelligent? What makes Artificial Intelligence, intelligent?

Intelligent Piece Of Paper
Template

I am the Intelligent Piece of Paper, nice to meet you, HUMAN.

Let's play a game of noughts and crosses.
I will be crosses (X) and you can be noughts (O).
I always go first.

Move 1:
Go in a corner.

Move 2:
IF the other player did not go there
THEN go in the opposite corner to move 1
ELSE go in a free corner.

Move 3:
IF there are 2 Xs and a space in a line
THEN go in that space
ELSE IF there are 2 Os and a space in a line
THEN go in that space
ELSE go in a free corner.

Move 4:
IF there are 2 Xs and a space in a line
THEN go in that space
ELSE IF there are 2 Os and a space in a line
THEN go in that space
ELSE go in a free corner.

Move 5:
Go in the free space.