Longitude Explorer Prize

How to use the activity plans:

Each activity apart from the introduction presentation has a plan for you to follow, a powerpoint presentation and list of materials needed for the session.

Some activities recommend handing out materials during the session so it is advised to spend roughly 15 minutes prior to prepare.

Below is an example activity plan schedule, however, it is up to you how much you think the group you are supporting will benefit from the activities.

Example activity plan schedule:

Week 1: Introductory presentation & An introduction into AI activity (40 mins)
Week 2: Living Greener activity (40 mins)
Week 3: Product development activity 1 & Product development activity 2 (40 mins)
Week 4: Product development activity 3 & finalise your application form (40 mins)

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An introduction to AI

Learning objective:
This activity aims to provide a fun way to introduce young people to some of the history and basics of artificial intelligence. It has been developed for groups which may have little or no background in AI.

Time:
- 15 mins

Materials needed:
- AI glossary
- AI factsheet

Slide 1:
Explain that this is a short activity to introduce them to what artificial intelligence is and some of the history around the technology.

Explain that to start they will do a short quiz together.

Slide 2:
Ask the group: Q. Does anyone know what artificial intelligence (AI) is? Or can you make a guess?

Once the group has provided some answers move on to slide 3.

Slide 3:
Explain that AI is the ability for a computer to learn patterns from data (data is what we call different types of information that is recorded (data can be words, numbers, images) to make recommendations or predictions.

Show the video.

Assure the group that its okay if they are still not totally sure they fully understand AI yet as there will be more activities and resources to help them as they take part in the Prize.

Hand out the AI glossary and factsheet.

Slide 4:
Ask the group: **Q. True or False: AI is at a stage where it could replace doctors.**

A. False

Explain that there has been some impressive success in using AI in healthcare, for example, helping doctors to make a diagnosis. However AI still has a long way to go before it could be replace doctors and it may never reach that capability.

Explain that the AI that we are using at the moment is generally called 'narrow AI' which is a machine that is programmed/learns to complete a task.

The AI that we see in science fiction and movies is something called 'General AI' which is a machine that can think, problem solve, learn etc. in a similar way to a human being - however its important to remember that we are still a long way from this!

Slide 5:
Ask the group: **Q. What are some of the ways that AI is already being used in our day to day lives?**

A. Explain that AI is actually already being used in lots of different ways in our day to day lives even if we are not aware of it.

Some of these examples can include:

- Suggesting the music or the movies you might want to listen to/watch e.g. making your netflix suggestions especially tailored to you.
- help doctors read X-rays and other medical images
- Personalize your news feed so you're seeing posts that interest you on Facebook
- Personalize emojis on Instagram
- Apply filters and animated effects on Snapchat
- Automatically identify objects in images on Pinterest

Slide 6:
Ask the group: **Q. Which video game did an AI machine beat a human at in 2019?**

A. Starcraft. Explain that an AI programme called Alphastar (made by Deepmind, owned by Google) has been able to beat top human players at a multiplayer video game called Starcraft. This is an important moment as the videogame is so complex with millions of actions throughout a game which a machine would have to learn and make a decision to play in a second.[1.]

1. JAMES TEMPERTON, WIRED [ONLINE] 2019: https://www.wired.co.uk/article/deepmind-starcraft-results-alphastar

Explain using games to train AI has had a long history from defeating a reigning chess champion to winning the game show jeopardy.[2]

Slide 7:
Ask the group: **Q. Do you think a computer could fool someone into thinking they were a human?**

A. *Explain that a famous test to see if a computer could make someone think they were having a conversation with a human was developed by Alan Turing - ask the group if anyone knows who this is?*

Explain that Alan Turing was an English mathematician but also an early leader in the computer science field. He is famously known for breaking the enigma code developed by the Germans during WW2. But he was also a pioneer in AI and developed this test to judge how sophisticated AI technology is.[3]

Explain that another famous test for AI is to see if an AI machine can create something original without human input. This was actually developed by someone who is believed to be the first computer programmer - ask the group if anyone knows who this is?

Explain this was a woman called Ada Lovelace, born in the early 1800's, whose work actually inspired that of Alan Turing![4]

Fun fact: The US Defence department's computer language is actually called Ada after Ada Lovelace.

Both of these tests are regarded as important ways to test and measure the advancement of AI.

Slide 8:
Ask the group: **Q. What percentage of authors of AI research papers can be identified as women?**

A. *Around 14% - Explain that a recent study found that the proportion of AI research papers co-authored by women has remained unchanged since the 1990s - and is significantly low at only 14%![5]*

Explain that a lack of diversity in AI research and development is actually a significant risk and can cause ethical issues. To ensure that the technology that is developed is useful for all then you need a wide range of people involved in the development of it.

Explain that this is why it is important for them to know about AI and think about the ways they could use it to tackle some of the issues that they care about - they are the ones who will know this best!

2. BBC, AI TIMELINE [ONLINE]:https://www.bbc.com/timelines/zq376fr#zgt4dmn
3. Philip Ball 2015 [ONLINE] http://www.bbc.com/future/story/20150724-the-problem-with-the-turing-test
4. Dominic Selwood, THE TELEGRAPH 2014 [ONLINE] https://www.telegraph.co.uk/technology/11285007/Ada-Lovelace-paved-the-way-for-Alan-Turings-more-celebrated-codebreaking-a-century-before-he-was-born.html
5. NESTA, 2019, [ONLINE] https://www.nesta.org.uk/report/gender-diversity-ai/

Slide 9:
To close the session explain that they are going to see a fun way of using AI through a google experiment called Quick Draw.

Show the video.

If there is time, launch the experiment and play the game with the group.

Explain that there are lots of AI experiments they could play with and other fun resources available to them through the prize at https://longitudeexplorer.challenges.org/

Additional resources

- AI: 15 key moments in the story of artificial intelligence: https://www.bbc.com/timelines/zq376fr#zgt4dmn
- Experiments with Google: https://experiments.withgoogle.com/collection/ai
- Best Machine Learning Datasets for beginners: https://hub.packtpub.com/best-machine-learning-datasets-for-beginners/