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Artificial Intelligence (AI) Workshop Session Plan



Workshop Schedule

“By failing to prepare, you are preparing to fail.”



Event Set Up	30 minutes
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Introduction

Welcome / Pre-day Forms	5 minutes
Introduction	5 minutes

(Slide 1)

(Slides 3-6)

Understanding AI

Can computers think?	5 minutes
Telephone Turing Test	15 minutes
What's a Chatbot?	5 minutes
What is intelligence?	20 minutes
Are computers intelligent?	10 minutes
Test Chatbot intelligence	20 minutes

(Slides 8-9)

(Slides 10-12)

(Slide 13)

(Slides 14-17)

(Slides 18-24)

(Slides 25-31)

Chatbot Programming

Program your own Chatbot	20 minutes
Following rules	20 minutes
Q&A/Post-day Forms	5 minutes
Event Clean Up	30 minutes

(Slides 32-38)

(Slides 39-47)

(Slide 48)

Total: 2 hours 10 minutes for attendees

Total: 3 hours 10 minutes for staff involved

Hardware and Software Requirements

1. PC (with speakers/headphones) per participant
2. Access to the internet, particularly the following sites:
www.youtube.com
www.cleverbot.com
www.jabberwacky.com
3. Turi software - with accounts for all class members
4. Physical Braitenberg vehicles if possible (video if not)



Attendee Prerequisites



1. No previous programming experience required.
2. Some basic knowledge of programming constructs (although it is taught with the assumption of no prior knowledge).
3. Complete consent form.

Learning Outcomes

1. Be able to recognise and confidently explain the terms: Artificial Intelligence, Alan Turing and Chatbots.
2. Understand the debate regarding the definition of human vs machine intelligence.
3. Be able to carry out different conversations on Chatbots and understand their limitations.



Event Set Up and Clean Up

Event Set Up

1. Prepare any pre and post-day questionnaire forms as required. Remember spare pens/pencils.
2. Ensure tables and chairs are arranged to naturally encourage people to sit in groups; ensure no one is sitting with their backs to the podium.
3. Test display equipment (e.g. projector) and ensure that presentation and internet connection are working and ready for use.
4. Install Turi software. (To obtain a copy of the Turi software and instructions on how to install it, please contact Mathew Keegan at mathewkeegan@gmail.com)
5. Create and issue each participant with a Turi log in.



Event Clean Up

1. Ensure all pre-day and post-day questionnaire forms have been collected if required.
2. Log out of Turi Accounts
3. Clear up litter and refuse. Remember to recycle where facilities exist. Remember to switch off lights, computers, and projectors!



Introduction

Welcome and Pre-day Forms

The first 5 minutes is very much about welcoming and encouraging people to complete any pre-day forms before the workshop begins. Also ensure you read through the pre-day forms with the participants to confirm they have been filled in correctly.

Ensure that you welcome the attendees as they enter the room; this helps to create a positive connection.

Introduction

The introduction gives you time to introduce everyone involved with hosting the workshop.

It is not necessary at this point to give an elaborate history of every person involved; try to keep to simple facts.

The main aim is to have everyone settled, focused, and filling required forms, e.g. pre- and post-day questionnaires.

Example Introduction

(Slide 3: About Technocamps)

“Good XXX, I’m XXX and I work for an pan-Wales organisation called Technocamps.

Has anybody heard of Technocamps before or been to one of our workshops?

We are a £6 million government funded organisation working towards getting young adults and children of the ages 11-19 years old excited about Computer Science and what it has to offer you, in both your education and a future career.”

(Slide 4: What is a STEM subject?)

Give a brief introduction to what STEM is are and how each subject links together.

(Slide 5: IT vs Computer Science)

Ask the students if they know the difference between IT and Computer Science, a discuss their ideas.

(Slide 6: How do we use computers in our everyday lives?)

Discuss with the group the ways in which the participants interact and use technology each day and how reliant on technology we have become.

Artificial Intelligence

(Slides 7 & 8: Can Computers think?)

The module centres around the idea of whether or not computers could be intelligent, bringing together Turing's work on intelligence, chatbots, and the idea of embodied cognition and robotics.

A vote in which you get the group to say whether they think computers could be intelligence. This vote can be done via clickers for an affective anonymous vote.

(Slides 9- 11: The Telephone Turing Test)

The Turing test, which we look at repeatedly (running a test using a mobile phone & two humans to begin with, which gets the participants familiar with the concepts before introducing ideas of AI and chatbots).



Deliverers may wish to familiarise themselves with the Turing test by reading the original article: Turing, A.M. (1950). Computing machinery and intelligence. *Mind*, 59, 433-460 (there are lots of copies available online).

Ask for a volunteer (someone chatty) and then ask them to go with one of the volunteers into another room, then ask the group to come up with a set of questions, to introduce the Turing theory using mobile phones. (If the signal is bad, you could alternatively use a helper running from room to room).

(Slide 12: What is a Chatbot?)

Introduce the idea that this conversation could have been with a computer and introduce the concept of “Chatbots”.

(Slides 13 - 16: What is intelligence?)

Introduce the concept of “What is intelligence?”. There is a printable version of the “Am I intelligent or not” ordering game. Working as a group, ask the students to put the cards in the order of which they think is the most intelligent to the one they think is the least intelligent. Once in a line and in order, get them to think about the properties of intelligent agents such as memory, speaking, friends and relationships, emotions etc.

Introduction

(Slides 17-23: Can Computers be intelligent?)

Ask the group about what clever things they think computers can do, but have some examples up your sleeve (i.e. satnav, autopilot, chess computer...). Next revisit the vote in which you get the group to say whether they think computers could be intelligent, to see if opinions have changed.

Show the dialogue to the class and ask the group if they think that A is human. In fact the dialogue is between Alice (A) and Jabberwacky (J), who are both chatbots. Tell the group about the work of Alan Turing, the Turing test and the Loebner Prize (an annual contest to find the best chatbot).

(Slides 24-30: Test Chatbot Intelligence)

Referring to the Turing test, get the group to think about how the question might tell them more about the answerer. Get each student to come up with 3 questions that they would ask a chatbot. Then get them to try them out first on Jabberwacky, then on Cleverbot, asking the students to write down the conversations that they have.

Show the students a youtube video "Cleverbot V Cleverbot", then discuss whether the group would think they were chatting to something intelligent if they had a conversation with either one.

Revisit the vote in which you get the group to say whether they think computers could be intelligent, to see if opinions have changed.



(Slides 31 - 37: Program your own Chatbot)



Giving a range of answers

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Input: do you want one or two
Response: <random>
          <li>One please</li>
          <li>Two please</li>
          </random>
```

This gives a random choice of responses from a list
So sometimes when you say "do you want one or two?" to your chatbot it will say "One please" and other times "Two please".

Lead the students through one of each programming example using Turi, then ask the group to have a go. Make sure that everyone works through each of the example.

Then, if time, the students are given a free rein to program Turi as they choose. At the end of this section revisit the vote once more about whether they think computers could be intelligent, to see if opinions have changed.

Artificial Intelligence

(Slides 38 - 45: Following Rules)

Ask the group to swap Chatbots with the person next to them. Then ask the students whether they had successfully managed to hold a conversation and if they had made sense? "Is simply rule following enough?". Ask them what is missing in the conversations with the Chatbot? What is it that we do between input and a response in a human-human conversation, this is what is lacking when conversing with a Chatbot!

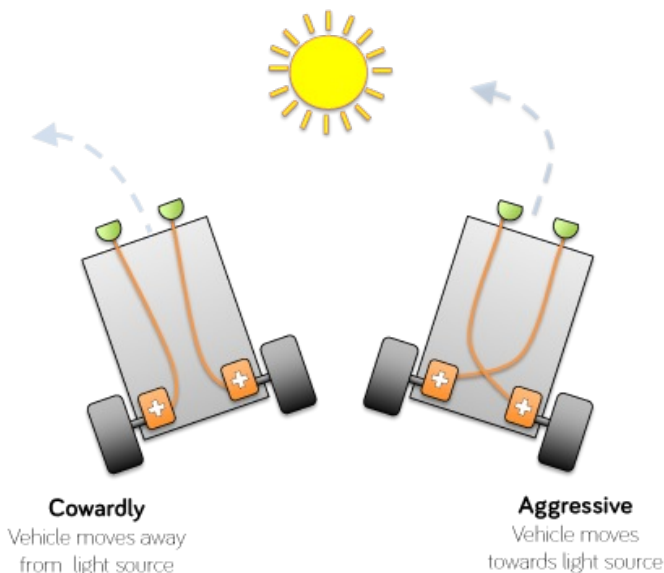
Next, do an activity to demonstrate rule following practically. Ask for a volunteer to imagine they are a robot, and get the group to program the volunteer to walk around the room. This will show the group how precise you need to be to be successful.

Follow up this practical exercise by showing them a video of ASIMO the most advanced humanoid robot, when he appeared on QI <http://www.youtube.com/v/JHwgBitYMIA>. Then discuss how well he follows orders and interacts with his surroundings.



Discuss the fact that Chatbots don't have bodies, so they don't move around or see things, but that they can learn. Does having a body make things different, does having a body make robots more intelligent than Chatbots?

Look at Braitenberg vehicles. The vehicles can move about autonomously and represents the Simplest form of behaviour based artificial intelligence and embodied cognition. The vehicle has two built in light sensors which are each connected to a wheel with an independent motor, and moves in response to the level of light detected. It is worth looking at Valentino Braitenberg's book, before running this session Braitenberg, V. (1984). Vehicles: Experiments in synthetic psychology. Cambridge, MA: MIT Press (copies can be found online).



If you have an actual Braitenberg vehicle demonstrate how it works, if not there are videos available, such as the YouTube video of the Lego Mindstorm's version of the Braitenberg vehicle.

<http://www.youtube.com/watch?v=yUVcI5Pw2o4&feature=relm>

Q&A Session & Closure

(Slide 48: Q&A Session)

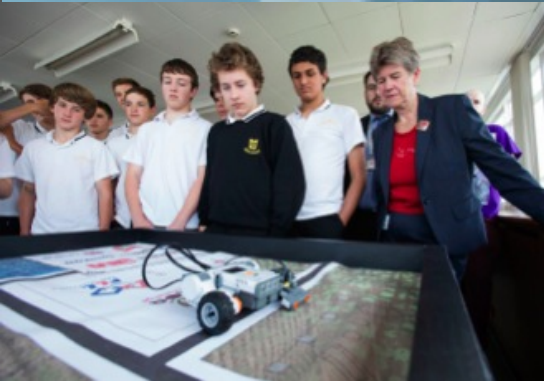
(Take several questions from the attendees)

(If no questions are asked by attendees, begin summarising topics covered)

Once an appropriate number of questions has been taken, you can then begin to close the workshop. Be sure to have any post-day questionnaire forms filled in by attendees as required. Some audiences may require more prompting to fill in such forms.

Closure and Post-day Forms

The last 5 minutes of closure must be used to, if required, ensure that post-day questionnaires are filled in by the attendees and talk them through the information they have filled in. Ensure that you collect all of the post-day form in before attendees depart, and be sure to thank each person for taking the time to fill in the forms.



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