Artificial Intelligence Week Following Lecture on 21 September

Practical

1. Read this BBC story:

   http://www.bbc.co.uk/news/technology-27762088

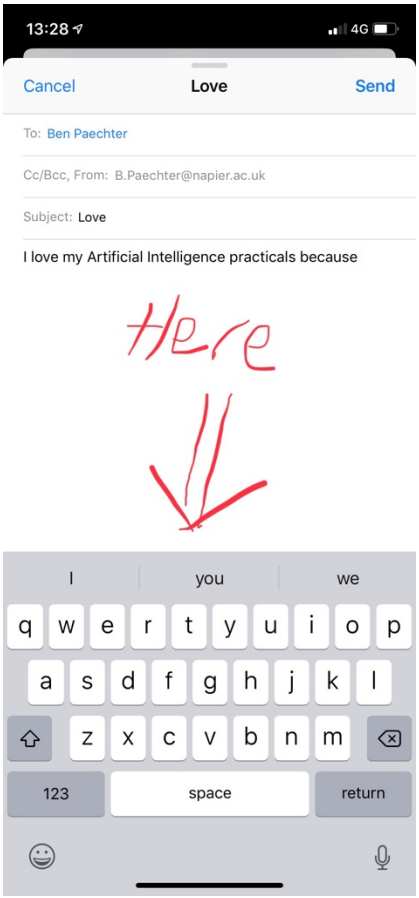
   Do you think the Turing Test had been passed by what is described here? What are your justifications?

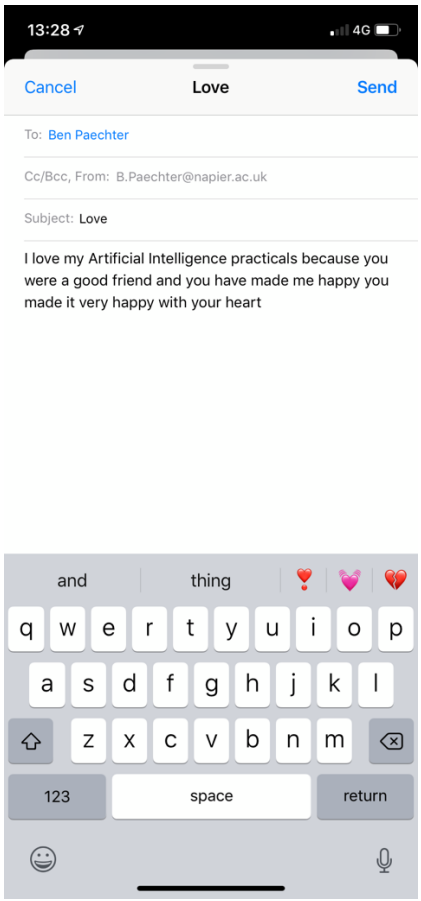
2. Four-time winner of the Loebner prize competition for the Turing Test is Mitsuku. You can have a conversation with Mitsuku here: https://www.pandorabots.com/mitsuku/

   Do you think Mitsuku is convincing? What questions can you think of that will be good to catch her out?

   What sort of artificial intelligence is this? "Thinking Rationally", "Thinking Humanly", "Acting Rationally", or "Acting Humanly"

3. If you have a smart phone trying opening a messaging app like messenger, whatsapp or email. Start by typing the message "I love my Artificial Intelligence practicals because" and then repeatedly select the middle button above the keyboard which suggests a word.





How good is the system at predicting what you might want to say?

If what comes up isn't private, try comparing what happens on your own phone with what happens on someone else's (if its private then try again and select the left or right buttons instead)

How good is the grammar?

How tailored to you are the answers?

Try a different app – are the answers similar?

What information do you think the phone is taking into account in trying to predict what you want to type?

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Tutorial

1. For each of the following assertions, say whether it is true or false and support your answer with examples or counterexamples where appropriate.

    a. An agent that senses only partial information about the state cannot be perfectly rational.
    b. There exist task environments in which no pure reflex agent can behave rationally.
    c. There exists a task environment in which every agent is rational.
    d. The input to an agent program is the same as the input to the agent function.
    e. Suppose an agent selects its action uniformly at random from the set of possible actions. There exists a deterministic task environment in which this agent is rational.
    f. Every agent is rational in an unobservable environment.
    g. A perfectly rational poker-playing agent never loses.

2. For each of the following activities, give a PEAS description of the task environment and characterize it in terms of the properties:

    - Fully or partially observable
    - Stochastic or deterministic
    - Sequential or episodic
    - Static or dynamic
    - Continuous or discrete
    - Single agent or multi-agent

    a. Performing a gymnastics floor routine
    b. Exploring the subsurface oceans of Titan
    c. Playing Football
    d. Shopping for used AI books on the internet
    e. Practicing tennis against a wall
    f. Performing a high jump
    g. Bidding on an item at an auction

3. This exercise explores the differences between agent functions and agent programs.

    a. Can there be more than one agent program that implements a given agent function? Give an example, or show why one is not possible.
    b. Are there agent functions that cannot be implemented by any agent program?
    c. Given a fixed machine architecture, does each agent program implement exactly one agent function?
    d. Suppose we keep the agent program fixed but speed up the machine by a factor of two. Does that change the agent function?

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Homework

Read chapter 3 of the course book.