

Tutorial 1:

The definition of artificial intelligence

Question 1

- a) Painting, Music composition, Literature, Theorem proving, Conversation, Writing books
- b) Calculations, Doing well understood repeated tasks such as, plotting data etc., Storing information (memory), Multi-tasking

Question 2

- a) Desks, chairs, windows, walls, whiteboard, blackboard, chalk, ceilings, people, clothes, laptops, pens, paper, textbooks, lights, light switch, blinds, air conditioning, air ...
- b) Exact relative spatial locations of objects, Emotions
- c)
 - Lift hand, arm, move fingers
 - Grab pen with hand the correct way around and with the top off
 - Vision for finding the pen, the whiteboard, the arm and hand holding the pen
 - Pressure of holding the pen, and using it to write with (not too lightly and not too hard)
 - Move the arm to create the appropriate writing on the board
 - What is being written? Knowledge of language, and also of the topic that is being written about.
- d) There is a theoretical “absolute reality” that is the way things are, and describes everything that exists in the world. However, an observer is only interested in the things that they can experience, interact with, and reason about. Anything else that might exist in the world isn't relevant to the observer. E.g. scents are much more important things in the world to animals such as dogs and rats than to humans.
- e) A way to focus the attention of the observer is the specific task that they are performing. The only things in the world that the observer is interested in are those things that help them to perform the task, or those things that are hindering them from performing the task

Question 3

- a) No, but it is important to understand how human beings think. One alternative is to copy other examples from biology. Another is to simply work out a better way to perform a task
- b) To do intelligent tasks machines don't need to understand, however, there is no consensus that to be intelligent do they need to understand what they are doing.
- c) Computer Vision, Speech Processing, Medical Diagnosis, Drug Discovery ...

Question 4

- a) Note that not all of these distinctions are well defined in the definitions of AI provided. The key thing you should get out of this question is an understanding of strong and weak AI, as well as the difference between scientific and engineering solutions.
 - i. scientific, strong

- ii. scientific, weak
- iii. engineering, weak
- iv. engineering, weak
- v. scientific, strong?
- vi. engineering, weak
- vii. scientific, weak
- viii. engineering, weak
- ix. engineering, weak
- x. engineering, weak
- xi. engineering, weak
- xii. scientific, strong?
- xiii. engineering, weak
- xiv. engineering, weak

b)

- Computational vs non-computational
- A comparison based on clarity of definition (scale them between 1 and 5)