

HUL381/ELL457: Mind, Machines and Language
Minor Test II, Maximum marks: 15

Section 1. (SM)

1. The goal of strong AI – to make computers not just mimic but actually think like humans do – has been often debated. The notion of ‘understanding’ has been used to dissect this issue by multiple thinkers. What according to you could be an acceptable demonstration to show that (a) they do not think like humans, and (b) they do think like humans? [1+1]
2. Imagine a scenario that requires looking at a driver and deciding whether to stop your car or drive at a road junction. This requires rules and tacit knowledge. Construct a pseudo-script like Schank’s which can aid in building such a decision for a driverless vehicle. Is there any other approach that could do so? If yes, construct a pseudo-diagram to explain its structure and processing. [2+2]
3. What are the main points in the connectionist agenda suggested by McClelland? Out of those, which point(s) are yet to be shown empirically to be true, according to you? [2]

Section 2. (SA)

4. The assigned readings by Turing, Searle, and Pinker all grapple with the same questions: can machines think, and if so, what kinds of machines? In this regard, answer the following:
 - (a) In what way did Turing anticipate the Chinese room kind of critique of the Turing test that Searle would make 30 years later? What was Turing’s response to this line of criticism? [2]
 - (b) Out of the three men, which two do you think would agree most closely with each other on these questions? Give reasons, based on the readings. [2]
5. Consider a convolutional neural network (CNN) which has been trained to be able to detect whether a given image contains a human playing a piano. Explain briefly what kinds of *representations* of the image the layers of such a CNN would be constructing. What sort of information about the image would be represented in each layer, and how would this change as you went up the layers? [2]
6. What are chaotic dynamics? Why do some people suggest that the brain, if thought of as a dynamical system, might be at the ‘edge of chaos’? [1]