Coursework 2 on *either* a Model/AI Program *or* the Possibility of Artificial Intelligence

For the second coursework, you have a choice, *either* to write another computer program using some of the modelling and/or Classical AI techniques that we have discussed in the module, *or* to submit an essay (of between 1500 and 2500 words) giving your own perspective on the possibilities and limits of artificial intelligence, in the light of the discussions that we have had in class.

Option (A): A Program

(i) Modelling Some Phenomenon

As in the first coursework, your program might implement some model which is of potential mathematical, scientific, or philosophical interest. But if so, this should be quite different from the model that you submitted for your first coursework, and by default, therefore, it should not be a cellular model (though if you have some idea for a cellular model that operates quite differently and thus avoids significant risk of overlap in techniques, feel free to propose that for my consideration).

(ii) Using Classical AI Techniques

Under this heading, your program might employ, or illustrate, some technique(s) of Classical AI (e.g. search, lookahead, recursion, minimaxing, reinforcement learning). It might, for example, play a simple game, or solve some kind of puzzle.

Whether you choose (i) or (ii), you should submit two things:

1. A computer program that you have written, conforming to one of the two descriptions above. The ideal program will:
   a) Work reliably on the *Turtle System* (downloadable version) and/or the *Online Turtle System* and/or the *Oxford Turtle Module* from *GitHub* for writing Turtle programs within standard Python. Please feel free to email me if you encounter any unexpected problems or need help.
   b) Be well written, with code that is clear and suitably annotated with comments, so that an expert reader familiar with the system should have a reasonable prospect of understanding quickly how the program is working.
   c) Be relatively short, proportionately to its interest, so that the implementation is efficient and clear. Ideal would be a program between around 100 and 200 lines of code, but a longer program would be OK as long as that length is clearly justified (e.g. if the program needs additional lines for setting up the screen display or various options, so that they're not adding significantly to the program's complexity). Again, please feel free to ask me if you would like advice.
   d) If you think your topic is suitable, it would be good to imagine that you are designing your program to become an example program within the *Turtle System*, all of which are intended to satisfy the criteria above.
2. A short document (between 1 and 4 pages) explaining the working of the program, and outlining any features of special interest – either regarding the phenomenon that is being modeled, or the general way that the program has been implemented, or its detailed working. Don't feel obliged to explain in detail how algorithms work – that shouldn't be necessary – but your document should aim to be easily understandable by me, so that I can appreciate how your program is working and what it is intended to do. Please include a description of what is supposed to happen when the program starts, the function of any inputs into the program – e.g. keyboard or mouse input – and of any general parameters in the program – e.g. variable settings that affect its behaviour.

Option (B): An Essay

If you choose to write an essay, then this should be between 1500 and 2500 words, on a topic that concerns the *possibility* and/or *potential* of AI in the light of the issues that we have discussed in class (*not* including consideration of the *risks* of AI which will be the focus of the final coursework). This might, for example, consider such traditional questions as the status and/or value of the Turing Test, or the impact of other thought-experiments such as Blockhead and the Chinese Room. But if so, you are strongly encouraged to include discussion of how these more traditional concerns may have been impacted by recent developments in Machine Learning and Large Language Models. You are also encouraged to discuss very recent material that has emerged in reaction to these recent developments (which is more likely to be found on the web than in printed sources). For philosophical material, the *Stanford Encyclopedia of Philosophy* is an excellent and relatively up-to-date resource.

Your submission should simply be a *Word* or *PDF* document containing the essay, which should conform to the following requirements:

a) The essay should have an appropriate title, and start with a brief explanation of the subject-matter and a sketch of what you plan to argue for.

b) It should end with a clear statement of your conclusion.

c) It should be clearly written and self-contained, so that where it draws on other material, it explains the relevant points sufficiently to enable the essay to be understood in isolation.

d) All references to other material should be clearly documented, and such material should be listed – in standard form – at the end of the essay. References to websites can be included in the main body of the essay (e.g. in footnotes), but references to printed materials should be made in the style, e.g. "Turing (1950), §2" or "Searle (1980), p. 420", so as not to take up excessive space. *The bibliographical list at the end of the essay does not count towards the word limit*.

Feel free to ask if you have any questions about these requirements, or would like suggestions for reading on specific topics.