Natural Language Understanding (CSL 7640)

Minor 2 – Take Home exam - 20 marks

From 5 pm on 25ᵗʰ March, 2023 to 11:59 pm on 26ᵗʰ March, 2023.

Attached is a paper titled – "Survey of Hallucination in Natural Language Generation" – by Zi et al. which discusses different types of "hallucinations" encountered by Natural Language Generation tasks.

1. Read the paper to understand issues about "hallucinations" that are encountered in NLG tasks.

2. Use Chatgpt (or any other NLG system) to generate text for **two** different tasks of your choice from the below-mentioned list in such a way that the system is "forced" to generate "hallucinations." (5 marks)

   Task 1 – one to be picked up from the set
   {Dialogue generation, Question Answering, Abstractive summarization}

   Task 2 – one to be picked up from the set {Data-to-Text, Machine Translation
   (English to Indian Language and Vice-versa}

   Your examples should be unique – similarity with any other answer script or any source text on the web would lead to marks deduction.

3. Explain the types of hallucinations observed by you in your answers, along with possible reasons for them. (5 marks)

4. Discuss what kind of measures have been proposed in literature about assessing the extent of hallucinations for the tasks of your choice. Also discuss the mitigation methods. (**Use pointers from the attached paper.**) (5 marks)

5. Imagine your role as an architect for an NLG system that is being planned to understand the utility of the Large Language Models (LLM) for the organization i.e. planning a "Proof of Concept". You have the freedom to choose any functionality for the organization and show how LLMs can be used advantageously. You can be highly innovative or highly utilitarian. (5 marks)

   (a). What is the system you are going to propose? Why? Which functionality is it addressing?

   (b). Explain the high-level architecture of your system – marking the inputs and expected outputs of the system.

   (c). What would be your test plan for the system? How would you evaluate it?

   (d). Are there any safeguards that you will suggest to the organization before adopting your system? Justify your answer.