



THE UNIVERSITY
of ADELAIDE

CRICOS PROVIDER 00123M

Final Project

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seek LIGHT

Project description

- In this project, you will develop a question-answering system similar to ChatPDF
(<https://www.chatpdf.com/Links to an external site.>)
- Your system should be able to answer the following three types of questions
 1. Direct query questions that can be matched to the text in the paragraph (e.g., what is CDE? which datasets are used for evaluation).
 2. Indirect query questions without specific keywords in the text (e.g., why should we use the proposed method?).
 3. Identification of key references that inspire the proposed methodology in the paper. [A special question]

Third-party usage

- You can use any library for text-preprocessing, generate embedding, localizing reference in addition to GPT API.
- But you need to implement the workflow by yourself.
- You need to also report the number of tokens in ChatGPT when you answer a question at the test time

Research Paper Overview

- We will focus on the research paper in NLP
- It usually involves an introduction to a new method. It has the following parts
 - Abstract, Introduction, Related works, Method, Experiment, Conclusion
- Demo

Requirement

- You are expected to use the ChatGPT API to complete this project, **but other alternative large language model are also welcome.** We will impose a limitation of using at most 800 tokens as input to ChatGPT for each question, as we aim to minimize costs.
- Additionally, you must write a brief report detailing your solutions for each type of question. For each question, include:
 1. A description of your solution.
 2. Observations from running your solution, along with a discussion of its limitations and potential improvements.
 3. Highlights of any innovative aspects of your solution.

Rubric

- Your project will be assessed based on:
 1. The effectiveness of your design.
 2. The cost, in terms of the number of tokens sent to the ChatGPT API (the fewer, the better).
 3. Your analysis of the results and the feasibility of your proposed solution.
 4. Your creativity in the design.

Marks

- The first type of question is worth 40% of the total marks, while the second and third types are worth 30% each.
 - Even if you do not know or don't have time to program, write down your design. You will receive partial marks
 - We do not expect everyone can complete all tasks. The second and the third questions can be challenging

Hints for question type 1

- You cannot expect to feed the whole document to ChatGPT to come up with a solution.
- You can first represent paragraphs or sentences as embeddings (or other form of representation) and then use try to find several relevant paragraphs, sentences that are related to the query question.
- The volume of the returned text is usually much fewer than the whole document and can fit into 800 token window as required. Then you can create prompt to ask ChatGPT to give you an answer.
- To save the cost for debugging, you can test your prompt in the ChatGPT website rather than calling API

Hints for question type 2 and 3

- In question 2, the query may not have the exact same keywords that can match to the paragraphs and thus you need to find a way to improve the matching capability
- In question 3, you need to find a way to localize reference first, this can be achieved by simple approaches (no need for using ChatGPT for localization)