Vrije Universiteit Amsterdam
Computational Thinking
Project Assignment: *Unibot*

Group number: 45
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Task distribution
<Koby wrote the notes and the opinion piece, Yamato constructed the flow chart, Misha wrote both the pseudocode and the python code, Ahmed was tasked with the presentation>

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Context Task

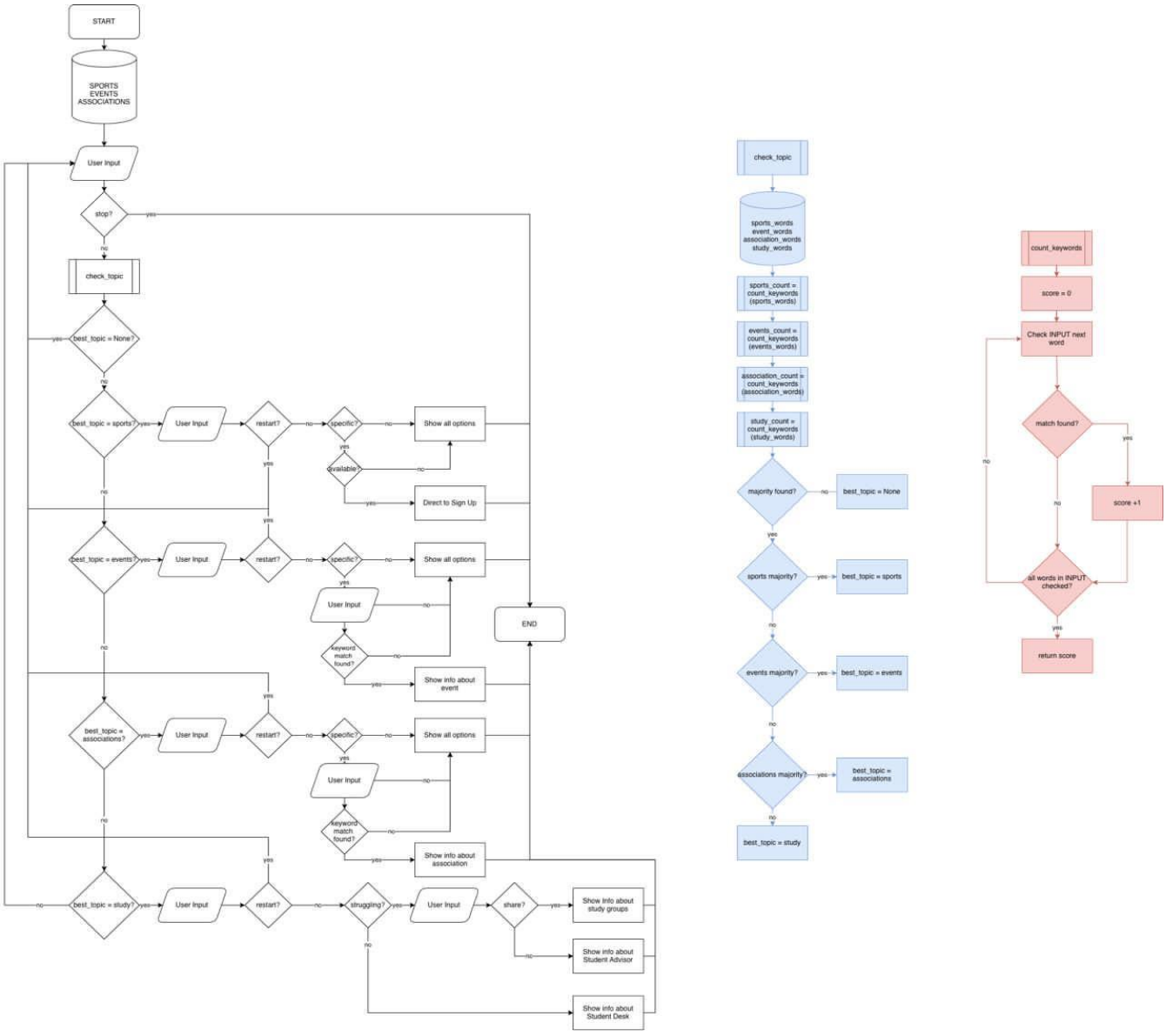
The use of Large Language Models (LLM's) has exploded in recent years. The field of AI has been around for a long time, but it was not until 2022 when ChatGPT first became available to the everyday user. Since then, there are a reported 700 million users with ChatGPT alone and everyone is using it differently. Some people are using it like a search engine, which is barely touching how powerful these models really are. Some scoff at how LLM's are not really thinking and hallucinate to a degree that makes them untrustworthy. The most common uses according to OpenAI, Harvard, and Yale is Practical Guidance, Seeking Information, and Writing (Chatterji et al., 2025). Our group sees these LLM's as incredible tools with the potential to help society run more efficiently while also holding the truth that with great power comes great responsibility. We see how there is a great ethical concern that is not on the horizon but is here now. These conversations need to shape how we as individuals use this technology along with how society uses these amazingly useful tools. We see the emergence of this technology as similar to that of the industrial revolution. During this time societies had to adapt, and new skills were highly sought after. In the same way that AI will undoubtedly replace some jobs currently, but we believe that new jobs that we cannot forecast now will emerge and just like before, it is on us as a society to adapt to these challenges in the 21st century.

Design process

We wanted our code to be simple and modular for readability. We wanted the user to have full control over their interactions with Unibot, so we added a stop and restart function that can be utilized at any time. There is a built-in key word detection algorithm so that Unibot may reference and direct the user to the correct information. Data from the Unilife.csv file was hardcoded so that anyone could run the code in a python compiler without having to set up a file path. Our first request is an open-ended question so that the user can best direct the conversation as they see fit. We are looking for as much input from the user in the initial stages of the conversation so Unibot can best direct them to the resources that will fit their needs best. We aim for the conversation to flow naturally, and hope the user feels they are talking with an actual person and not a computer program. We have added a function called StudyChat for students who are struggling with their classes. This is user given data and Unibot will not just bring this up unless the user themselves brings up they are struggling with their classes. StudyChat is best suited for directing users to information that can assist them whether that is study tips, study groups, or professional help from the university. We also prompt the user on how open they are with this struggle and based on their response the appropriate service is offered. With respect to the question about sports, we start with a simple yes or no question, if yes then they are directed to more information regarding the activities offered at the university. We handled the interpretation of free text by having a large list of key words that are associated with each topic that the bot can handle. If the user's input had multiple key words across several topics, for example "I am struggling with fitting into society". Struggling is a study key word and society is an association key word, in which case, the Unibot will re-prompt and ask for clarification of the conversation topic. If any of the key words are in the free text, we can continue with guiding the user to the appropriate

information. If there are not any key words then Unibot will prompt the user again, this is also how we choose to handle any uncertainty. The Unibot requests clarification by asking the user if they want help with studying, sports, events, or associations, which is still treated like an open question.

Flowchart



The flowchart is divided into three parts. The first part is the main function of the algorithm. It covers everything from Start to End, except for the check_topic function and count_keywords function, including every possible chat. The second part covers the check_topic function, which determines the most relevant topic based on the user's input by comparing the frequency of keywords related to each topic. The output of this subroutine will be the "best_topic" value. Lastly, the count_keywords subroutine contains the actual steps of counting keyword occurrences, returning a score (count).

Pseudocode

Submitted separately.

Reflection

In all honestly after discussion and reflection as a group we found this project to be a bit laborious and redundant, however this was an overarching theme with this entire course. We collectively spent about ten hours overall on this project, this includes group meetings over text, in person meetings, and individual work. We did enjoy working together as a group. We all did what we needed to do when we needed to do it. Though we may not have learned anything specifically new, we deepened our overall understanding of logic thinking and better understand the tools we have learned in this course. We think if the groups were smaller, it would give everyone to have a chance to write their own pseudocode, as it seems to be a common theme for one or two people to write all the code and the others to work on other parts based entirely on said code. Regarding general advice on this course, we believe that it would be better to merge this course with Introduction to AI, making it 6 ECT's, and return to having 2 periods of Introduction to python, which could easily contain the main curriculum of this course.