CS 461: Requirement Document Activities

Prototype a web-based tool for creating and executing task-delineated, collaborative, AI-assisted assignments

Creative Activity

Apply the SCAMPER method:

- Substitute
- Combine
- Modify/Magnify/Minify
- Put to another use
- Eliminate
- Rearrange

Utilizing the SCAMPER method to creatively enhance the AI-assistance of our assignment web tool.

Substitute:
Rather than using and training our own AI chatbot, we can substitute building one from scratch with a preexisting one, such as implementing freelance artificial intelligence such as ChatGPT or Canva into our web tool. Alternatively, we can substitute building one from scratch by using these models as examples to create our own models. This can both simultaneously increase the quality of our product by using more refined tools and reduce the workload.

Combine:
We can potentially combine our student AI-assistant with our autograder, or the data they are trained on in the case of a fully AI grader. In this way, we can ensure our trained AI will not give incorrect feedback and aid to students ensuring they trust our model more than other online models.

Modify/Magnify/Minify:
We want to magnify the emphasis of AI-assisted assignments. To do this, we can modify our web tool to allow the option for teachers to only allow progress in parts of assignments after interacting with our AI assistant. In this way, we can ensure students are properly using the provided AI tools.

Put to another use:
To help students understand and learn through AI-assisted assignments, we can reutilize an AI grader. Ideally, our web tool will contain an auto-grader for teachers to use. We can put this aspect to another use and allow students to run it like a check-script to give immediate feedback on which parts of an assignment are failing to meet standards without giving them correct answers. They can use this AI feedback with the AI assistance.

Eliminate:
As our goal is to ensure students can ethically use AI to assist in their learning, we could eliminate standard plagiarism flagging tools. Instead, our implemented AI should instead guide students through recommending verified articles and helping them to understand necessary formatting for citation.

Rearrange:
To emphasize ethically using AI to assist in learning, we should rearrange assignments to have multiple stages through which students must progress, having them use an AI assistant through each step to ensure proper education at each point. Rather than linear assignments submitted as one whole, they must be rearranged to be formatted in parts where students can access AI assisted learning tools at each part.

Requirement Activity

SWOT Analysis

- Strengths: Identify the internal strengths of your project (e.g., team skills, resources).
- Weaknesses: Determine internal weaknesses (e.g., limitations in knowledge, budget).
- Opportunities: Explore external opportunities that could benefit your project (e.g., new technologies, partnerships).
- Threats: Identify external risks or challenges (e.g., competitors, regulatory issues).

Strengths: The project has multiple internal strengths. All team members have adequate skills in computer science and web development, and as students have a clear understanding of the weaknesses of a standard assignment web tools such as Canvas. Furthermore, as students, each team member has a strong understanding of how and when students choose to use AI to aid them in assignments, and for what purposes they employ the use of them rather than utilizing other resources.

Weaknesses: An internal weakness our team will struggle with is a lack of resources and experience in training language models. The extent to which we will build and train our own AI assistant is still subject to change, but as we lack a large pool of data to train AI models, it may be difficult to accomplish. Our prototype AI assistant will likely only have very moderate capabilities, and training it for future versions may prove to be very difficult.

Opportunities: Some external opportunities we can take advantage of are other online large language models that can be found online. Examples include ChatGPT and Microsoft Copilot, and by studying and researching these tools we could benefit. Another way we may benefit from these is utilizing open freelance language models which can potentially be trained on our own data, as partnering with such tools would drastically improve quality and reduce workload.

Threats: One threat to our project is resistance to change. WIthout significant reason to change to a new platform, most people will choose to stick to a software they are familiar with. Because of this, we need to make our web tool either a significant boost to current software such as Canvas to encourage swapping, or potentially external plugins that could be utilized by a resource such as Canvas. Otherwise, current teachers will have little incentive to change to using our web tool, and students will not benefit from it.

Planning Activity

Weekly Work Intensity:

Week	Expected	Actual	Notes
1	Low	Low	
2	Low	Low	Operating Systems 2 Lab Week
3	Low	Low	
4	Medium	Low	Operating Systems 2 Lab Week
5	Medium	Low	
6	High	Low	
7	Low	N/A	Operating Systems 2 Lab Week
8	High	N/A	
9	High	N/A	
10	Low	N/A	Dead Week
F	Low	N/A	Finals Week

Week 6 Reflection:
While I did expect my actual effort to be low in the beginning weeks, I hoped to pick up my work ethic at about week 4 to begin work on the team project. However, I have repeatedly put off beginning work on it and have given only low effort attempts as of week 6 so far. I need to better manage my time by completing more of my work beforehand, specifically for some of the other online courses I am taking this term, so that I can more rigidly focus on the capstone project. I will attempt to do this by setting weekly alarms for myself so that I am always at least 3 days ahead of assignments for other classes (exception of unposted assignments).