CMPSC 580
Junior Seminar
Spring 2022

Assignment 9:
Final Deliverable

Objectives

To connect the work from the semester to introduce, motivate, and explain a research idea in terms of its scope, feasibility, developed prototype, and preliminary results from run experiments.

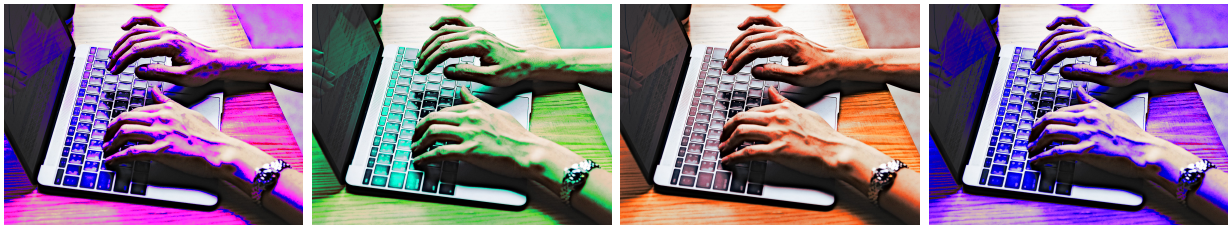

Figure 1: During the semester, we have been working through assignments designed to help us explore an idea. Each assignment concentrated on specific aspects of the idea development and execution process. In this work, we will reflect on those assignments to combine their outcomes to tell a story of a research idea.

Clone Your Assignment Repository

Today's assignment repository can be found at the below link to a GitHub Classroom repository. Here you will work on the implementation of your prototype and then you must push your work to the GitHub cloud where the instructor will be able to view your work for grading. Often, there will be files in your assignment repositories which you are to edit before you submit them by using the below commands for `git`. **Please note that the instructor cannot view your submission and cannot grade your work unless you `push` your work to the GitHub cloud!**

https://classroom.github.com/a/JmRS6Jys

To use this link, please follow the steps below.

- Click on the link and accept the assignment
- Once the importing task has completed, click on the created assignment link which will take you to your newly created GitHub repository for this lab,
- Clone this repository (bearing your name) and work locally
- As you are working on your lab, you are to commit and push regularly. The commands are the following.

- `git add -A`
- `git commit -m ‘‘Your notes about commit here’’`
- `git push`

Introduction

Across each of our assignments, we have used reason to explore different aspects of idea development. Each of these assignments had specific objectives:

- Assignment 2 (**The Literature**): To learn how to use public online searches to locate and read peer-reviewed articles in the literature to the benefit of a research interest and software tools to help facilitate your research.
- Assignment 3 (**The Web Notebook**): To learn how to set up a Hugo and Netlify to create a website which will play the part of a research notebook.
- Assignment 4 (**The Gap**): To contemplate the deliverable of your research project by identifying the knowledge gap motivated by relevant literature. This assignment will invite the student to consider the end-product so as to begin to set goals for a senior thesis research project.
- Assignment 5 (**Project Feasibility**): To determine some of the parameters which are necessary to complete a technical project. To explore the available resources at hand (i.e., tools, skills, literature, data, and etc.) which will be applied to the completing of the project. To inquire whether a project can be completed in a given time frame (2-3 months) with the application of the available tools.
- Assignment 6 (**The Prototype**): To design and implement a prototype tool that can run experiments, collect data, and analyze results. To write clear documentation, which allows others to use the tool, and to demonstrate the implemented prototype.
- Assignment 7 (**Experimentation**): To design and conduct an experiment using developed prototype to collect preliminary data with a goal of answering at least one research question connected to the research project idea.

In this assignment, you are to combine the knowledge gained in each of these previous assignments to write a basic draft of your proposal (at least 2000 words) in which you discuss the following main ideas.

1. What is the area of your research in your proposed project idea? What is your specific proposed idea and why is it important? Motivate with references as relevant.
2. What is already known in the literature about this problem area; where does your project's concentration of your own interests lie in this area? What goals have you set for this project? Motivate with references as relevant.

3. What is the *Gap* between the field and the knowledge of the area? Why is this gap present and what are the implications of the gap and what is your solution to try to bridge this gap? Motivate with references as relevant.

4. Using specifics, what is/are the research question(s) that motivate your research project?

5. Discuss the scope and feasibility of this work. For instance, what are the limits in your area of research? How far do you indent to follow this research question?

6. Discuss the prototype you developed to demonstrate feasibility. Give an overview of its design and implementation. Discuss any data and existing software/libraries/tools that were necessary for the development of your prototype.

7. What evidence is there that the prototype will provide any support for your project? How will your prototype be helpful in the planning, execution and completion of your research project?

8. Discuss the experiment that you performed involving the prototype. What were the hypotheses and research question(s) of your experiment and what steps were taken to respond to them?

9. Discuss the results of the experiment. What was learned from applying these steps which will be helpful to the completion of your projec and the achieving the main goals of your research project?

10. How did you explain and visualize your results from your experiment so that they could be understood by those who are not in your field of research? Explain how these visualizations could be used in your research project to help explain its foundations.

11. What ethical concerns are involved with your research? How will you recognize them and how will you handle them once they are apparent?

12. What are the next steps to develop and complete your research project.

Summary of deliverables

- **THIS week's work**
  - **Part1; For lab (Wednesday)**: Begin planning and then complete and submit the outline for this writing assignment in `writing/outline.md`. At least one GitHub commit must be present at the conclusion of the lab.
  - **Part2; For class (Thursday)**: Peer interviews discussing the questions above to determine how a story should be written to encapsulate the essence of each of these questions. Each interviewer is to submit a GitHub issue to their interviewee's Assignment 09 repository outlining their suggestions for improvement of story development to ensure clarity and cohesiveness.
- **NEXT week's work**

  - **Part 3; For class (Tuesday)**: Continue the writing assignment in `writing/report.md` where you follow your outline and perhaps, some of the remarks given to you by your interviewer. At least one additional GitHub commit is required at the conclusion of this class session.
  - **Part 4; For lab (Wednesday)**: Work day to complete the writing assignment in `writing/report.md`.
  - **Part 5; For class (Thursday)**: Panel

- **Finals week's work**
  - **Part 6**: Create a blog post containing your comprehensive, clear, and coherent story explaining your research project, its motivation, research gap it addresses, prototype, preliminary results through experimentation, ethical considerations of your project, and future work that you would need to complete to bring your project to a conclusion next year.

- If needed, revisit the `prototype/` repository (Assignment 06) to ensure it is functioning correctly and is properly documented. Your thesis readers next year will review your prototype, experimentation, and the final writing assignment work before beginning their supervision of your project.

- **Web notebook**: Please provide a cohesive blog post that includes this writing assignment (min 2000 words). Please title your posting, *Research Proposal*.

Help?

Please let the instructor know of any questions that you may have. Please use email or make office-hour appointment slots if you would like to discuss an issue.