

**CMPSC 580
Junior Seminar
Spring 2022**

**Assignment 2:
Topic Exploration For a Senior Thesis Proposal**

Objectives

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.

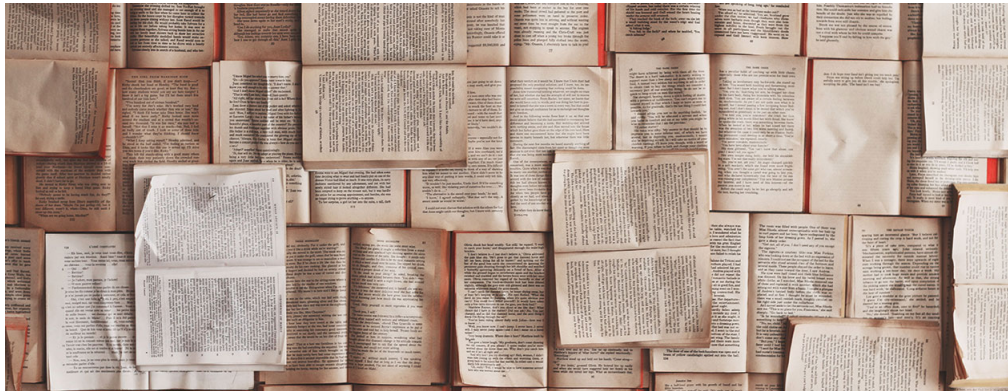


Figure 1: There is a lot of literature out there!

Preparation

In this section, we will be using `Git` commands. It is suggested that the reader refer to online searches for help. For example, GitHub provides good documentation at the following link; <https://git.github.io/htmldocs/git.html>.

In many cases, you will be given a new repository containing assignment materials and you will save your files in this assignment repository as you continue to work on them. Copy and paste the assignment repository cloning command into your terminal to create your assignment repositories. Be sure to place your assignment repositories in a directory such as `cs312/` to keep your class materials organized by class.

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 your assignment 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/ZISlhzdG>

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`

Reading

When researching an idea in a scientific investigation, it is necessary to complete research in the literature to learn facts about the subject, determine technical details and to broaden one's own knowledge on the topic. As indicated in Figure 1, there is a lot of literature to find and so it is important to have an idea about what kind of articles to pursue. Articles for research projects are likely to come from publishers who have completed some type of study, written up the work, and have submitted it peer-reviewing to ensure that its work contains good science. Collectively, these peer-reviewed articles make-up what is known to be the *literature*. Please note, blogs, postings and similar writings do not make-up this corpus of academic literature since they are not reviewed by experts in the field to check for faults in procedure, method and conduct before they are pushed to social-media sites.

To learn about strategies for locating research articles, please read articles titled “How to Read a Paper” by S. Keshav and “How to Read a Computer Science Research Paper” by A. Stent.

- “How to Read a Paper”
 - <https://web.stanford.edu/class/ee384m/Handouts/HowtoReadPaper.pdf>
- “How to Read a Computer Science Research Paper”
 - <https://people.cs.pitt.edu/~litman/courses/cs2710/papers/howtoreadacspaper.pdf>

A silly website to show you how how topics are paired with articles, please visit the below website. While the generator is a joke, one notices how keywords can be extracted from an idea to be used to find articles on the topic (whatever it may be!).

- How To Pick A Worthy Topic In 10 Seconds:
 - <https://www.cs.purdue.edu/homes/comer/essay.topic.generator.html>

Part 1: An Area of Interest

Last week, you all had a chance to think about and assess your interests in the areas of computer science and informatics. In these fields, it is typical for many ideas to be composed of ideas from many different directions. To investigate your areas of interest further, a dive into literature in that and related areas is necessary. Additionally, your research will necessarily involve the use of software and exploration of existing software tools is needed.

This week, you are invited to explore various sources of literature and existing software tools related to your broad area of interest and the keywords you will identify that affiliate with your interests. You are to answer (in writing) several leading questions which have been designed to help you to find out more about your specific area(s) of interest. To learn about what an area has to offer, and about the directions of its research, you will be reading through primary source articles from online repositories such as Google Scholar (<https://scholar.google.com/>) and explore existing software tools from sources such as Github (<https://github.com>). After you have found relevant articles and have spend some time to read through their abstracts and explored some relevant software tools, please complete the questions in the Markdown file.

Be sure to think about what you *love* about an area that you *like* and why it *excites* you.

Writing Task

Perform online research at sites offering articles from your interest to get your work started. For instance, at sites such as <https://scholar.google.com>, a general keyword from your interest area can yield a multitude of articles that may be perfect for your work. Look through the articles carefully to decide whether they are helpful to your work and to get more ideas. These articles do not need to be all from computer science or informatics related areas. Remember that rich ideas come from a fruitful combination of topics from various fields. Keep a note of these ideas for when you complete your leading questions in the Markdown file located in your assignment repository.

In the `report.md` Markdown file), you will be invited to answer the following questions.

1. What *interest area* did you explore this week?
2. What keywords did you use to find *relevant* articles?
3. In more detail describe one of the most exciting related articles that you found in a few sentences. For this article state:
 - the goal and motivation of the work,
 - the research question(s) behind the work (what did they study, what problem did they seek to solve),
 - what they accomplished, and
 - what future directions of their work are possible.

Please include the article's references. Note, these references can be found by clicking on the "cite" link in Google Scholar.

4. What type of relevant software resources (libraries, data, algorithms, open-source tools, online tools, etc.) did you find?
5. In more detail describe one of the software resources that you found. For this software resource state:
 - the goal and motivation of the software,
 - the application and relevance of the software to your topic,
 - what does the software do,
 - what is needed to use the software (use/run the software to answer this question),
 - who are the users of the software.

In the next part, you will be introducing your narrowed-down interest(s) from your research to the class during a lightning-talk of three minutes.

Part 2: Lightning Talk and Slides

For Thursday's class, prepare a three (3) minute "lightning talk", together with several accompanying slides (written in a software of your choice), in which you expand upon your narrowed-down area of interest. Remember, you do not need to know exactly what your research project will be but your talk should discuss your area of interest in a more focused way. I will be looking for a progression of a thought from last week to this week as this assignment is to help you narrow-down a larger idea to a smaller one.

Presentation Task

For your talk, please respond to the following questions. Remember you will have only three minutes in your talk and so you will have to be brief.

1. What *was originally* your interest area?
2. What did you learn about this interest area since last week?
3. What *is now* your interest area?
4. What types of articles did you find to help your narrow down your interest area?
5. What types of existing software resources did you find to help you achieve your potential research goal?

Summary of deliverables

- Complete your Markdown report for the class assignment grade.
- Prepare and give a three (3) minute lightning talk for Thursday's class for a checkmark participation point.

Help?

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