CMPSC 580
Junior Seminar
Spring 2021

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.

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

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

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- "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.

This week, you are invited to explore various sources of literature 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/`). After you have found relevant articles and have spend some time to read through their abstracts and other material as necessary, please complete the questions at the Google form link above.

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 Google Docs form (using the link provided above).

In the Google form (`https://forms.gle/P7wcTo33JHSxErPt7`), 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. What kinds of *important articles* (based in academia or industry) did you find from this search to give you a better view of where you would like to start a project? Give a brief overview (2-5 sentences) of the nature of the articles. How did these articles help you conceptualize work being done in your area of interest.

4. Now, in more detail describe two of the most exciting works that you found in a few sentences. For each 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.

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?

Covid-19 Safety

If you are in-person for Thursday's class, then your talk will be made using your computer while you are in class. The option is available to you if you would like to present your talk from the front of the classroom. If you would rather not come to class to present, then it would be acceptable to use Zoom while online to present.

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Summary of deliverables

- Complete your survey form for a check-mark grade

- Prepare a three (3) minute lightning talk for Thursday's class to be given in person or online (however you want)

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.