Milestone 1: Defining your project

Due Thursday, Sep 14, 2023

While it sounds simple, it can be hard to define a project whose scope is achievable while at the same time producing new insights or discoveries. We will spend the first few weeks ensuring that your project is something that you are passionate about, uses your accumulated knowledge from coursework and is achievable over your capstone year. This milestone requires you to write a brief description of your project, goals, and how you will accomplish them.

Components of your writeup

a) A clear and concise description of the problem you're solving (this part will later become the abstract of your final report).

- It should be clear from the description what your final product is planned to be (a program implementing a computational model, a paper describing a new algorithm, a paper describing the study of the problem with your algorithm, etc.)
- The description should be accessible for a computer science literate reader who is not familiar with your interdisciplinary area.

b) Motivate your problem with context and examples. At minimum:

- The context, a sample situation or a class of situation where the problem occurs.
- The audience, who is the potential user of your software, reader of your paper.
- Need, why doing the work you do is important? What would be the positive effect of having accomplished what you plan for yourself?
- Analogous situations, if applicable: does this problem or similar problem appear in other areas of life?
- Novelty/uniqueness of your problem. Are you analyzing new data with existing computational method? Are you developing a new computational method to look at the existing data? There should be a novel component in your capstone project, describe it.

c) Describe previous work of other that's relevant to your project. You should:

- Describe the existing work that has already been done to accomplish your task or similar task. If applicable, provide comparisons of your approach with those solutions.
- Start collecting references and cite all sources that you have consulted. These references will form the foundation for later stages of writing up your capstone work. Published sources should contain standard bibliographical info (at minimum authors, title, venue/book/journal, year, pages). Online sources should contain working links. For theoretical results, only the articles published in peer-reviewed conference and journal papers, and books, are allowed sources. For practical projects, other public sources (such as Wikipedia, StackOverflow, Reddit, TechCrunch, Wired and the like) are allowed as long as you have critically assessed them and reasonably believe them to be true.

d) Describe challenges of the problem and your approach to them, and why it might work. You should:

- Describe the envisioned challenges for solving your problem.
- Technologies/tools/approaches. Although this is an early phase and the technicalities may appear later or change, at this point you should have an overall idea of the techniques and tools (software packages, mathematical methods) necessary for your work. Describe them.
- Why your particular approach is desirable or unique. Relate your approach to the descriptions of previous work outlined above.
- If your project relies on analyzing data, describe how you will obtain it and nature of the data source (your advisor, another Tulane affiliate, data will be handed to you, you will get open dataset online, you will generate synthetic data that mimics real data, and so on).

e) Description of feasibility as discussed with the faculty mentor who will oversee your project, along with a meeting plan for the semester. It is best to go over your Milestone 1 document with your mentor several times to ensure that you are all on the same page. Remember that they will grade your milestones together with me, and that your meeting plan will comprise 20% of your grade.

f) Roles of each member in your group, and an accounting of how much overall work each member is taking on.

The report should be well organized, clearly written, and easy to follow with relevant and legitimate information presented. It should have good mechanics (grammar, punctuation, spelling, etc.); 11-12 point font, with standard margins and 1-1.5 spacing; filler whitespace and text are avoided. This document should be 2-3 pages of text not including references. As a general guideline for this milestone and other reports, it is better to turn in a great concise document that is a few lines short of the requirement than a long watered-down document; this short(er) document should still satisfy all other quality criteria to receive full credit.