

University of Utah School of Computing

CS 6170

Final Project Description

Spring 2019

1 Project Description

Your final project can be designed from the perspective of a data practitioner, a developer or a data theorist. As a data practitioner, you could use interesting and nontrivial datasets in various application domains (e.g. marketing, scientific simulation, transportation, business intelligence, etc.), and apply emerging and innovative TDA techniques (possible in combination with other data mining and machine learning techniques) to obtain insights on the data. As a developer, you could develop new software tools or extend existing ones that combine TDA with data mining and machine learning. As a data theorist, you could work towards new theories, algorithms or data structures in the field of computational topology and TDA.

You are responsible to pitch your project idea at a level that is appropriate for your background. Try to challenge yourself, at the same time, be realistic. In the case when you underestimate the difficulty of your project, please make sure that you have something to submit by the due date; choosing a project that is too difficult is not a valid reason for an incomplete.

2 Project Team

You will work in a team with two members (forming a team with one member, or a team with more than two members will require the permission from the instructor). You can form the team on your own; or the instructor could make some suggestions based on your submitted CV. Please try to form your project team as early as possible.

3 Important Dates

You could submit reports for the following project milestones on or before (as early as possible) the due dates. Each milestone report is due at 9:10 a.m. on its due date; the usual late submission policy applies. The following includes an *estimated* timeline for the milestones (see course website for details and schedule updates).

- Project team creation: due February 7.
- Project proposal description: due March 7.
- Project progress report: due April 2.
- Project presentations: on April 23 (Tuesday, 9:10 - 10:30 a.m.) and April 29th (Monday, 8:00 - 10:00 a.m.).

- Project final report: due April 30 (Tuesday, 9:10 a.m.).

You should form your two person project team by February 7.

Your project proposal description is due on March 7 to give sufficient time for the instructor feedback. Your proposal should be 3-4 pages, well-thought out and well-written (see course website for details).

Your project progress report is due on April 2. The report should describe the portion of the project that has been completed, what yet to be done. It should describe whether or not your team has met the milestones described in the proposal. If you plan to make modifications to your project proposal, please provide a reasonable justification and an updated timeline with milestones (see course website for details).

The final project presentations take place on April 23 (Tuesday, 9:10 - 10:30 a.m.) and April 29th (Monday, 8:00 - 10:00 a.m.). A sign-up sheet will be available after the Spring Break.

The final project report is due on April 30 (see course website for details).

4 Final Project Proposal

Your project proposal should be a well-written, 3-4 page description of your *proposed* final project. It should contain the following parts:

1. Team Members: the names and UID of your team members.
2. Introduction: Motivation and a brief project description.
3. Project Objective: What is the main objective/goal of your project? What are you planning to do to achieve your objective/goal?
4. Data: What are the type(s) of data your project will be dealing with? How do you plan to get hold of such data sets? What kind of insights are you planning to obtain from your data?
5. Background: What are the state-of-the-art techniques in dealing with the data of your interest?
6. Technical Contributions: What are the *expected* technical contributions of your proposed work? What are the differences and similarities between your proposed work and the state-of-the-art?
7. Expected Outcomes and Deliverables: What are the expected outcomes of your proposed project? What do you plan to hand in? (e.g. source code, video demo, etc.)
8. Evaluation: What are the metrics to be used to evaluate how successful your project is once it is completed by the end of the semester?
9. Proposed Methods: What methods are you planning to use/develop? What are your strategies in tackling the proposed problem?
10. Software: What are the software (and possibly hardware) do you plan to use? Or in the case you are working on software extensions, what is the baseline software you plan to work with?
11. Timelines: Between March 7th and April 23, what are the various milestones you plan to achieve along the way?
12. Project Summary: Answer specific questions below using *only* 1-2 sentences:
 - What is an overview of your project?
 - Why is the project worth pursuing?

- What are your project objectives?
- What are the questions you would like to answer?
- What data will you plan to use?
- How can we evaluate how successful your project is once it is completed?

Your project proposal report is to be submitted in PDF (or ZIP, if your submission contains data other than the report alone).