Final Project

CMSC 858L
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Fall 2026

1 General Information

The final project for CMSC 858L is to summarize the main results from one or more related research papers (or original research) in the area of quantum complexity. It is done in groups of 1–5 people. There will be two components to the project: A written part, submitted on Gradescope; and an oral presentation in class.

You are not required to do original research as part of this project. If you want to try to do it, you are welcome to, but you should still be reading relevant papers to provide background for the project. If the research does not produce results, you can summarize the background papers.

The goal here is to understand the contents of the papers and synthesize the papers into your own words, not to copy material from the original papers. Outsourcing the work to an AI system does not meet the educational goal of this project. Therefore, no LLMs are allowed in the writing or in producing the presentation. It is OK to use LLMs to suggest papers to read at early stages of the project or to explain concepts, but in the latter case, you must use your own words to explain those concepts in the writeup.

The project as a whole is worth 35% of your grade for the class. Of that, 40% will be based on the oral presentation and 60% on the written project.

2 Deadlines

- Proposal: Nov. 5 (by email).
- Presentations: Dec. 8 and 10, in class (possibly just Dec. 10, depending on how many groups we have)
- Written project due date: Dec. 11, 11:59 PM (submitted on Gradescope).

3 Proposal

Send me by email, the following information:

1. Your name and the names of everyone in your group.
2. The general topic your project will cover
3. Any specific papers you have in mind to read as part of your project.

Only one submission per group is needed. If you are having trouble coming up with a topic or papers on a topic, let me know and we can discuss. There are also some possible topics (not at all an exclusive list) on the course web page.

4 Presentation

The amount of time you will have to present will depend on how many groups there are. Larger groups will have more time. You should focus on the motivation and context of the papers you covered, plus the main result(s). The goal should be to get across the concept and the significance of the papers.

The grading of the presentation will be based on both the correctness of the material presented and the quality of the presentation, including choice of material and clarity.

5 Paper

The written project should synthesize the ideas in the research papers you read, or, in case you did original research, explain your results. It should be formatted like a research paper, including an introduction explaining the context and relevance of the results, any necessary background not covered in class, and some technical material describing at least the results in detail. Generally, you should also be including some detailed discussion about methods used to derive the results (e.g., proofs), but exactly how much depends on the available space.

The level of the presentation in the paper should be for a student who has learned the material covered in class.

The write-up should be in your own words and should not imitate the structure or presentation of the research paper too closely. If you are having trouble doing this, try putting aside the research paper and writing up your own version without directly referencing the original paper. Then go back and check any points where you are unsure if you correctly described the point.

You will need to use your judgement about which aspects from the original papers to focus on and which to de-emphasize. In general, the length should be in the range 10–30 pages, depending on the amount of content to cover, which in turn should depend on the size of the group.

If your group has more than 1 person, you should include in the writeup a section saying what each person in the group contributed to the project.

Grading will be based on correctness, choice of material to include and how well the work is put into context, and quality of presentation (including both clarity and construction of a professional-looking paper).