MAT280 Final Project Description

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Instructions

Your article should be a 5–10 page expository article on a topic of your choice related to the course.

Your topic should be something you're interested in; check with me if you want to know whether a topic counts as "related to" this course. I will generally be quite flexible, because the goal is to give you the opportunity to learn something you personally want to learn about.

If you'd like feedback from me, optional drafts are due on the following dates:

- Draft 1: Sunday, November 24, 2024
- Draft 2: Wednesday, December 4, 2024

The final, polished article is due at 11:59 pm on Thursday, November 12, 2024.

Rubric

You will be graded on four aspects, each accounting for 25 points:

1. *Clarity of exposition:*

   This is perhaps the most obvious point; your expository article should reflect that you have learned and understood the content. This will be judged by how clear your exposition is, i.e. how understandable it will be to the target audience, which should roughly be graduate students interested in learning about Khovanov homology (e.g. your peers in the class).

2. *Depth of content:*

   The topic you choose will need to be explored deeply enough, though. It's not hard to write a very clear exposition on very little content. Your goal here should be to cover a topic / paper sufficiently so that the information you write down corresponds to about 1-2 class lectures of material, along with solving the kinds of homework problems I might have assigned in this course.

   One way to think about this is to imagine that this article is substituting for you giving a 50-minute lecture, along with worked exercises.

3. *Worked example(s):*

   In your write-up, I will be looking for explicitly worked out examples. This of course will look different for each student and each topic, but the idea is that you need to have at least one nontrivial example / hands-on exercise to show that you can put the ideas in the article to use. For some topics, it might make sense to do many small examples, building in complexity. For others, one calculation might be enough (e.g. Bar-Natan's intro paper on Khovanov homology works out only the trefoil in full detail).

4. *Professional style:*

   Your article must be TeXed properly, and submitted in PDF form. I will provide an Overleaf template on the class website for you to use, if you are unfamiliar with any parts of the article-writing process.

   One especially important component here are your **References.** You **absolutely must** cite authors and references properly.

For other aspects of professional writing, you should try to emulate the papers we have been following in this course. To be super clear, you must typeset math appropriately and use definition, theorem, lemma, etc. environments properly.

If you are not sure if you're typesetting correctly, I highly recommend you submit the optional drafts according to the deadlines above so that I'll have time to give you some feedback.

More remarks

- The 5-10 large page range is meant to give you flexibility. You should absolutely include figures; I am not expecting to read 5 full pages of dense text! You should focus on clarity and depth (points (1) and (2) above) and make your article the appropriate length based on that.
- The page limit does not include the references list. **You absolutely must properly cite authors and papers.**
- I am not requiring that you make your images in Inkscape or tikz; this is a secondary skill that you will learn if/when you need it, and is not a main concern right now. You may handdraw your figures, draw them on a tablet, draw them on MSPaint, etc., and then place them in your article as figures.

  The only rule is that your **images need to be mathematically correct and useful**. In other words, if your images were sent to an artist for rendering and then placed into your article, the article should be publishable to the academic internet. For example, the handdrawn-on-iPad pictures in my lecture notes would be perfectly fine.