

Homework 5

Math 469, Spring 2024

This homework is due on Friday, Feb. 16 at 11:30 am. (Turn in your answers – via Gradescope – to questions 1–2.)

0. Read Sections 2.1–2.3, 2.5–2.6
1. Section 2.12 #1–3, 5–6
2. (In this part of your homework, you will begin writing parts of your final paper.) *You may write these together with your project partner – if so, only one of you needs to turn in this part, but state clearly on both homeworks that you are doing this.*
 - (a) What is the scientific (biological) context/motivation behind your paper?
 - (b) State the main scientific and/or mathematical question(s) that the paper addresses. *(Your answer should be in the form of a question.)*
 - (c) Why are the questions in (b) important and/or interesting?
 - (d) What were the objectives of the paper? How do they relate to the question(s) you stated in part (b)? What did the authors do to meet these objectives (for instance, did they develop or analyze a mathematical model)?
 - (e) Does your paper involve *forward* or *reverse modeling*¹ (or neither)? Explain.

¹From Homework 3.

Final project (rubric)

The final report is due on TUESDAY, APRIL 30, by 5pm, to the instructor's office.

Requirements for the final report: The report should explain, critique, and/or extend the results in the paper you have chosen to read and analyze. Specifically, the report must:

- (a) describe the scientific/mathematical context and background,
- (b) state the main scientific/mathematical questions addressed in the paper,
- (c) explain why these questions are important and/or interesting,
- (d) describe the authors' objectives and what they do to achieve them,
- (e) state (*here, a description is not enough!*) at least one main mathematical result (together with all necessary definitions),
- (f) interpret the significance of the result in terms of the authors' objectives,
- (g) explain the scientific/mathematical conclusions the authors reached, and
- (h) extend the results in the paper and/or critique some scientific or mathematical aspect of the paper.

There is no length restriction, but each final report will likely comprise four or more pages.

Grading for the final report: Grading is out of 100 points, largely for meeting the requirements listed above:

- 20 points for (a)–(d)
- 25 points for (e)–(g)
- 20 points for (h)
- 15 points for addressing comments from the instructor and peers on prior drafts
- 15 points for organization and clarity
- 5 points for correct spelling and grammar.

Requirements for the final presentation: The presentation should accomplish (a)–(h), with the aid of computer slides. The time allotted for each presentation (1 or 2 students) is 20 minutes, with additional time for questions.

Grading for the final presentation: Grading is out of 100 points: 50 points for achieving (a)–(h), 30 points for clear and effective slides, 20 points for organization and clarity.