

Review Summary 3: Normals, Tail Bounds and MLE

Instead of the midterm, we have three “Review Summary” assignments that are meant to replace the reviewing, summarizing, and reflecting that studying for exams provides. The majority of your time will be spent reviewing and reflecting on the material covered in a given subset of the lectures.

Submission: You must upload a **pdf** of your written solutions to Gradescope under “Review Summary 3”. The use of \LaTeX is *highly recommended*. (Note that if you want to hand-write your solutions, you’ll need to scan them. We will take off points for hand-written solutions that are difficult to read due to poor handwriting and neatness.)

\LaTeX practice EdStem lesson: <https://edstem.org/us/courses/6206/lessons/16640/>

Due Date: This assignment is due at 11:59 PM Friday August 13 (Seattle time, i.e. GMT-7).

You will submit the written problems as a PDF to Gradescope. Please put each numbered problem on its own page of the pdf (this will make selecting pages easier when you submit), and ensure that your pdfs are oriented correctly (e.g. not upside-down or sideways).

Collaboration: You are to work on this assignment yourself as it is a reflection of your own learning.

1. Study Guide

Unit 1: Lecture 15 (Continuous Zoo) - Lecture 22 (Maximum Likelihood Estimation)

Create a 1.5-2 pages study guide covering the material from this unit.

This guide should be a compilation of the most important concepts from this unit to you. Do not think of this as a “cheat sheet” where all that is listed are formulas and definitions like what you might see in the review portions of the section handout or our distribution cheat sheet. Instead, think about how you might use these rules or formulas in different problem settings. You may include any formulas from class in your study guide, but these should not make up the majority of the guide. If you choose to include definitions, you should also translate the definitions and/or explanations into your own words.

This study guide should be formatted in a way that you would benefit from it the most. Imagine it like if you were to take machine learning a year after taking this class and wanted to review the topics. Any legible format is fine, including bullet points. You can also include example problems from lecture/section, diagrams or anything else that you feel will benefit yourself when looking back on this study guide in the future.

2. Reflection

In 1-2 short paragraphs, reflect on the material from this unit. This should not be more than half a page long.

Some questions you can answer are:

- What was something that stood out to you in this unit? Why?
- How does the content from this unit relate to the real world? Relate to computer science?

Answers should not be in the form of “Now I know how to count”. Instead, describe how counting was an interesting topic for you or how we could use counting in the real world. Feel free to include some specific examples here as well.

3. Feedback

What were the topics that took the longest to understand? You may list examples from lectures or sections that were particularly challenging.