Assignment 2: Analysis of Probabilistic Data Structures

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1 Introduction

Explanation of the selected data structure briefly and their potential applications.

2 Computational Complexity

The time and space computational complexity of the data structures. Need to justify the complexity briefly, and explain each parameters used and provide the formula with appropriate references. Use a table to compare the three against each other.

3 Dataset

Explination of generating the synthetic data being used for testing all three data structures, and why it has been chosen.

4 Experiments

A brief explanation on the experiments being conducted, why they were chosen for these data structures, and a hypothesis/analysis of how each will perform.

A table summarizing the measured performance of each data structure. Plots showing the run time complexity comparison. Comment on how the previous analysis holds up against the results. If the plots contradict the previous analysis, analyze them carefully: double check the implementation and review the analysis, provide justifications, and explain why this is happening.

References

Acknowledgments

Anthropic's Claude was used to generate some documentation once implementation was complete, reviewing the finalized report to suggest edits, and improving the repository file structure. The complete source code and dataset for this project are available at https://github.com/rileyeaton-ubc/ubc-520-a2.

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