

CSCI 1051 Problem Set 4

January 26, 2025

Submission Instructions

Please upload your solutions by **5pm Wednesday January 29, 2025**.

- You are encouraged to discuss ideas and work with your classmates. However, you **must acknowledge** your collaborators at the top of each solution on which you collaborated with others and you **must write** your solutions independently.
- Your solutions to theory questions must be written legibly, or typeset in LaTeX or markdown. If you would like to use LaTeX, you can import the source of this document here to Overleaf.
- I recommend that you write your solutions to coding questions in a Jupyter notebook using Google Colab.
- You should submit your solutions as a **single PDF** via the assignment on Gradescope.

Problem 1: Interpretability

Part A: Data, Training, SHAP

Using `shap`, load (a subset of) the California dataset. Using `sklearn`, train a linear regression and neural network model on the data. Using `shap`, apply an explainer of your choice to each model and the dataset.

Part B: Waterfall Plot

For the same observation in the dataset, make a waterfall plot with the Shapley values for both models. What do you notice?

Part C: Beeswarm Plot

Make a beeswarm plot with the Shapley values for both models. What do you notice?