ML Challenge Report

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1 Data

Describe how you explored your data, and the process through which you determined your input features. How did you end up representing your data? What else did you try? We are looking for: – A thorough exploration of the data, similar to what is presented in labs. What are the distributions of the features? How do these features correlate with the target?

– If you use figures to answer those questions, an explanation of how you are interpreting those figures. Take care that your figures can be interpreted meaningfully.

– A clear and logical description of how you determined your input features, with convincing logical or empirical evidence justifying your choice. Important features are not overlooked (e.g., not removed for "ease"). – A clear description of the way(s) that you are representing the data in your models. – The descriptions should be consistent with the .py and/or .ipynb files that you used while developing your model. – A clear description of how you are splitting your data into various sets. You may use k-fold cross validation if you'd like, but if you do, describe how you are applying that idea.

We used a variety of plots to explore the data depending on the data type.

For numerical features such as Q1: How complex is it to make the food Q4: How much would you pay for the food, we used box plots and histograms to see the distribution of data for each food class. Using boxplots allowed us to identify the median and outliers of the responses, allowing us to see whether some food correlates with the question more than others.

We see an interesting correlation between the number of ingredients and the food. For pizza, we have a normal distribution where the majority of the inputs labeled it as having a difficulty of 3. For sushi on the other hand, the distribution is more uniformed, with a peak of 4 but a wider spread.

2 Model

A description of the model(s) that you are evaluating/exploring. We are expecting a thorough exploration of at least 3+ family of models1, even if you don't ultimately use those models. We are looking for: – How you are applying

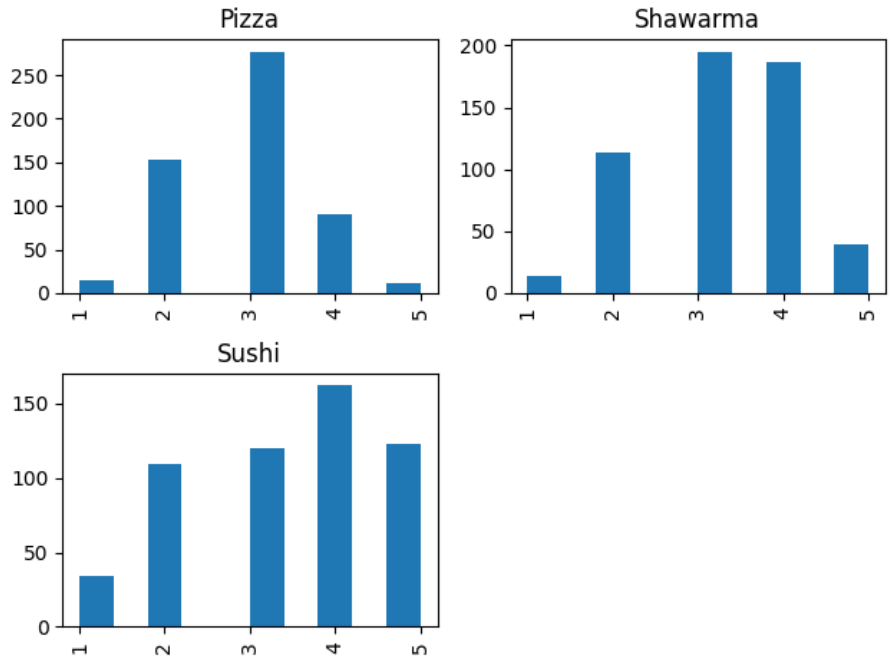

Figure 1: Input Size vs. Simulation Time for Nearest Neighbors and Comparison Sort for Different Regions on an X86MinorCPU.

these models. You don't need to reiterate what the models are and how they work. Instead, we're looking for a description of the choices you are making to apply the model to this task: e.g., what features from the "Data" section are you using for each model? What adjustments (if any) did you need to make?

3 Model Choice and Hyperparameters

How you are determining what model(s) to use in your final pred.py, as well as an exploration of hyperparameters. We are looking for: – A convincing explanation of how you ensured that the evaluation metrics for various models are comparable (i.e., are you using a consistent test set?) – A clear description of the evaluation metric(s) used to evaluate your model, as well as justification for its use. – A description of the hyperparameters that you are tuning, hyperparameter value combinations that you have tried, and the value of the evaluation metric(s) for those hyperparameters. We are not looking for an exhaustive search of all possible hyperparameter combinations, but there should be enough evidence to demonstrate that your hyperparameter choices are reasonable. (Note that just saying "X was the best hyperparameter value based on metric Y out of the hyperparameter values we tried" is not enough. Please

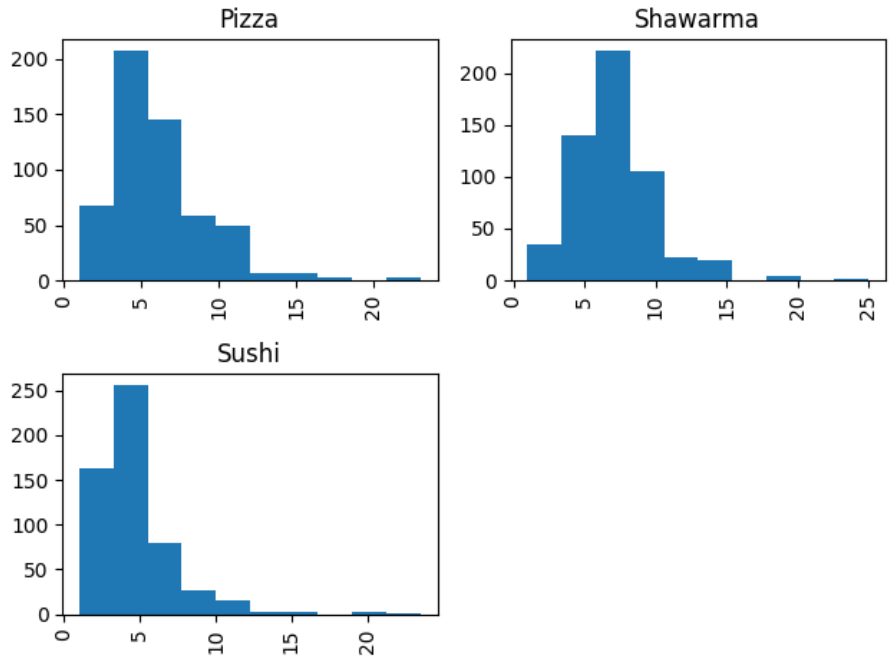

Figure 2: Input Size vs. Simulation Time for Nearest Neighbors and Comparison Sort for Different Regions on an X86MinorCPU.

present the values of the evaluation metrics for each hyperparameter value to show that your choice was the best one.) – A clear description of what your final model choice looks like in the submitted pred.py file. – The descriptions should be consistent with the .py and/or .ipynb files that you used while developing your model.

4 Prediction

How well would you expect your model to perform on the test set? We are looking for: – A point estimate for your performance, not a range. – A reasoned explanation of your expected model performance, with empirical evidence supporting your explanation. You are not graded on the closeness of your estimate to the final test accuracy, but you are graded on your reasoning.

5 Workload Distribution

A description of what each person in the group contributed to the project. A 1-2 sentence description of each person's role is sufficient. Each student's

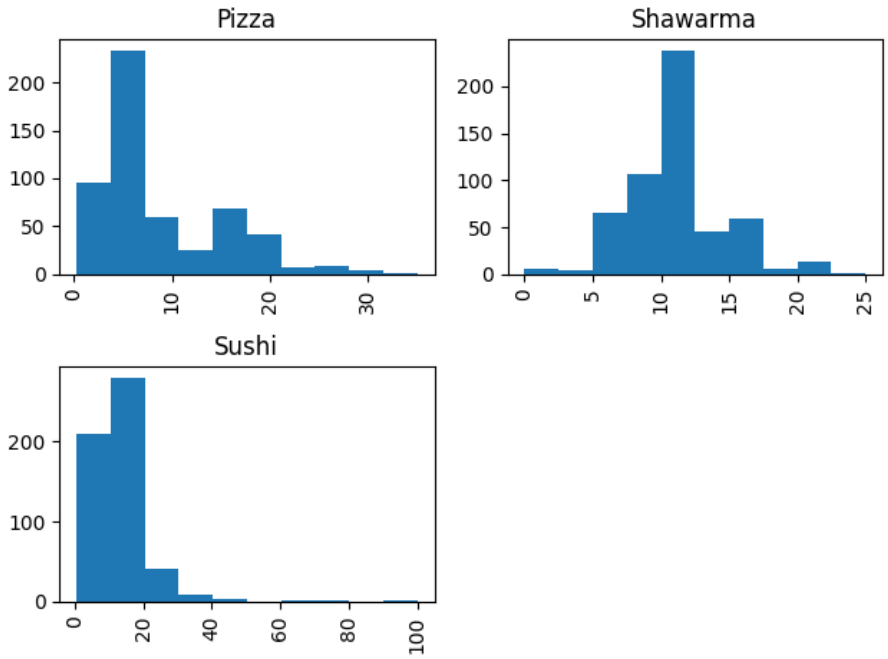

Figure 3: Input Size vs. Simulation Time for Nearest Neighbors and Comparison Sort for Different Regions on an X86MinorCPU.

description must be written by that student in order for them to receive credit for the project.