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CS 4710 Artificial Intelligence

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Homework 4 Writeup

We used the Naïve Bayes algorithm to determine the most likely cuisine of a recipe given the ingredients of that recipe. We followed the algorithm as it was described in class, computing:

The result V­nb is the cuisine with the highest probability of being the correct label for a given recipe.

We made a **couple of changes** to our basic implementation of the algorithm in order to optimize it. In one section there was a triple “for” loop where the program searched through every single ingredient inside a loop that went through the entire list of ingredients. This was a huge amount of searching that could be reduced by slightly increasing the space complexity. We optimized this search by creating a dictionary where the keys were the 20 cuisines, and values were lists containing all recipes of each cuisine. We had the program search through this list when looking for ingredients inside the first two “for” loops so that it was not necessary to search through every single recipe every time.

**Hey John, check if you think we should describe naïve bayes in any more depth than I did already (it seemed like he wanted something really general) and add a description of any other optimizations you did. He also wanted stats on training time, along with specs of cpu and memory of the computer it was tested on. Since you were the one conducting testing earlier I’m gonna let you add that data if you don’t mind. Let me know if there’s anything else you’d like help with or checked before turning it in, or just turn it in whenever if you’re fine with it.**