Assignment 2 - Motif Finding Part 1

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In this report I will discuss my design considerations, my difficulties, and run time comparison scatter plots.

**DESIGN CONSIDERATIONS**

There were not very many design considerations because all of the methods were written in pseudocode in the book or in the class slides. When writing my code, I wrote some of the basic helper functions first such as score, profile, consensus\_p, score\_p, and the actg2num and num2actg methods. Then I began to write the brute force motif search.

After I had written the brute force motif search, I wrote the helper methods for the other three functions which are nextLeaf, nextVertex, and byPass. I tested these methods by creating test methods where I printed out results and checked if the results were valid. This was not Test Driven Development, but oh well.

The structure of my code is almost identical to the pseudo code; there is not much unique about my code. What I did add were several test functions. These are not so much tests as functions that print out several outputs of functions to check if the functions are generating the right output.

**DIFFICULTIES MET**

I had quite a few difficulties doing this assignment. The hardest difficulty was simply understanding the algorithms and the subroutines (nextLeaf, nextVertex, byPass). Once I understood the algorithms and subroutines, the code was not too difficult to implement, however I had some problems with hard to find bugs. I feel that is is all too common when I implement someone else’s pseudo code, and when I’m programming in an unfamiliar language. In particular, I had some nasty index out of bounds errors that were due to my misuse of the score() function inside of Branch and Bound Motif Search. I also had some other miscellaneous bugs.

**Run Time Comparison Chart**

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