**REPORT**

**Project 3: Pattern Matching Algorithms (1. Brute-force, 2. BM Horspool and 3. KMP)**

**Submitted By**

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**Overview of Algorithms (short description)**

Here, I basically used 3 different algorithms for the pattern matching task. The algorithms are as:

1. Brute-force algorithm.
2. Boyer Moore Horspool algorithm and
3. Knuth Morris Pratt (KMP) algorithm.

**Algorithm 1 (Brute-force):**

This algorithm basically takes a text **T** and a patter **P** and for each element of **T**, it starts an execution of matching with pattern **P**. If it matches then the next item of **T** is being tried to match with the next item of **P** and so on. If does not get matched, it then starts the whole matching of patter **P**, starting from the next item of text **T**.

This algorithm does not use any pre-processing to the text **T** or pattern **P**.

**Algorithm 2 (Boyer Moore Horspool):**

This algorithm use searching by some pre-processing of the pattern.

This algorithm need to form a **Shift Table** to determine how much the pattern needs to shifted if a mismatch occurs.

The algorithm executes the searching of the pattern **P** in the text **T**, by following an order from **Right to Left**.

**Algorithm 3 (KMP – Knuth Morris Pratt):**

This algorithm use searching by also some pre-processing of the pattern.

This algorithm need to form a **Failure Function** to determine how much the pattern needs to shifted if a mismatch occurs and also what will be the index of the pattern to match on next.

The algorithm executes the searching of the pattern **P** in the text **T**, by following an order from **Left to Right**.

**Data Structure Used**

**Runtime of Code**

**Dijkstra’s algorithm**

**MST Kruskal’s algorithm**

**Sample Input & Output**

**Instruction to Run Program**

The running procedure of my implementation is pretty much simple.

I have only one python script named as **project\_2.py.**

Here is this script,

I basically kept a list for the input file names for both shortest path implementation and MST Kruskal implementation ( i.e.

file\_list = [**'dijkstra\_graph\_1.txt'**, **'dijkstra\_graph\_2.txt'**, **'dijkstra\_graph\_3.txt'**, **'dijkstra\_graph\_4.txt'**]

)

So updating this list with the file name/s I want to run and running the script will do the work.