Approximate String Overlap Finder

Introduction

This is an implementation for a solution for approximate all-pairs suffix prefix using compact prefix tree. We called our solution Approximate String overlap finder (ASOF). This solution uses OpenMp to support multithreading.

To compile : make

Running the program

Apsp filename

The program has one parameter and four optional parameters:

filename: is the name of the file. Here is an example for the contents of the file:

```
ACCCCAT
TTTCCAGG
TTTGGCCAAA
```

where '\n' (new line) is the separator between input strings. The separator can be changed.

Optional parameters:

-p the number of threads which are used. (The maximum is the default)

-o Output. The default is 0 (no output)

1 : results are shown in two-dimensional array (k^2)

2 : outputting all suffix prefix matches (default).

-m Minimal match length. (The default is 1).

-h Number of mismatches (The default is 3).

Examples

This command will find overlaps using 4 threads. The results will be put in two-dimensional array. Minimal length is 10. The number of allowed mismatches is 2:

```
Apsp  test.txt -p 4  -m 10 -o 1 -h 2
```

Run the code sequentially

to run the code sequentially:

```
Apsp test.txt -p 1
```

Important

- You can generate random cases to test the code. The program 'gen' will generate a random string. The user specifies 3 parameters:
  1- K (number of strings)
  2- N (total size of all strings)
  3- If the generated strings have equal sizes.

The resulting file, test.txt, includes a string with the appropriate format.

- If you have a fasta file, please use the program 'converter' to convert a fasta file to a file with the right format. To run:

```
converter t1.fasta t1.txt
```

- You may supply your own file. An example:

```
AACCCCAAAA
CCCGGTTTAAAAAA
AAGTCCCC
```

- In Apsp.cpp, there is a constant MAX_K which determines the maximum number of strings which the program can accept.

- Make sure that you DON'T run the program with output=1 when you k >10000 since a two-dimensional array is required to store results (k^2).

- If you have any problem, please contact us:

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