

# Edit distance problem on a GPU-cluster

Antoine Veenstra  
University of Twente  
P.O. Box 217, 7500AE Enschede  
The Netherlands  
a.j.veenstra@student.utwente.nl

## ABSTRACT

In this paper, we describe how the edit distance problem can be distributed over a GPU-cluster using MPI.

## Keywords

OpenCL, Edit distance problem, GPU-cluster, C++, case study, GPGPU program, MPI, Message Passing Interface, case study

## 1. INTRODUCTION

As the amount of data increases the need for parallel does so too. The edit distance problem is used in various fields of research[3]. Fields such as Computational Biology, Signal Processing, and Text Retrieval. This algorithm has already been implemented on a single Graphics Processing Unit (GPU)[1], but to decrease the processing time even further a logical step is to increase the number of GPUs[2]. These GPUs allow the processing asdf os

The existing implementation of this problem uses a dynamic programming algorithm, which is well-suited for

How will the proposed implementation improve performance?

## 2. RESEARCH QUESTIONS

The research question of this proposal is:

How much can the processing time needed to calculate the edit distance problem be reduced using a GPU cluster which uses MPI?

## 3. BACKGROUND

### 3.1 OpenCL

### 3.2 GPGPU programming

### 3.3 MPI

### 3.4 Edit distance

The edit distance problem is a way of measuring how much two strings differ from each other. The distance between two strings is measured by inserting, removing, and rearranging characters. The operations considered

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## 4. RELATED WORK

### 4.1 Edit distance problem on GPU

### 4.2 Benchmark on a GPU-cluster

## 5. METHOD

## 6. CONCLUSIONS

## 7. ACKNOWLEDGMENTS

## 8. REFERENCES

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