GPU Computing

First Assignment
Report

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April 22, 2024

1 Introduction

The goal of this homework is to implement an algorithm that transposes a non-symmetric matrix. Furthermore, different metrics of the algorithm should be measured and analyzed. In this report I describe the problem setting, algorithms and experimental results of my implementation.
The code used for this homework is made available through a public Github repository. Details on how to run the code and reproduce the results can be found in the `README.md` file of the Github repository.

2 Problem Description

For a given matrix $A \in \mathbb{R}^{n \times m}$, the transpose of the matrix $A^T \in \mathbb{R}^{m \times n}$ is defined as

$$A_{ij}^T = A_{ji}$$

In this homework, matrices have dimensions of 2^N for $N \in \mathbb{N}$, so only square matrices are considered. As a result, the implemented algorithms don't need to accommodate changes in the output matrix's shape.

While implementing an algorithm that computes the transpose of a matrix is straightforward, comming up with an efficient implementation is quite tricky. Generally, the exploitation of spatial and temporal locality can enhance efficiency.

2.1 Algorithms

All human things are subject to decay. And when fate summons, Monarchs must obey.

3 Experiments

3.1 Setup

3.2 Results

All human things are subject to decay. And when fate summons, Monarchs must obey.