CSE 625 Term Project Report

<Project Title>

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# Project statement and objective

Blah

# Approach

**Hardware Used:**

The project was all performed on my home computer with the following specifications:

* **CPU**

Intel(R) Core(TM) i9-10900K CPU @ 3.70GHz

AVX2 (256-bit MM registers)

10 cores / 20 threads

20 MB Intel Smart Cache (L3-cache)

* **RAM**

32 GB DDR4 RAM

* **GPU**

TUF RTX3080 (Ampere GPU)

8704 CUDA cores  
 5 MB of L2-Cache

10GB GDDR6X

# Implementation

**Section 1: OpenMP All\_Pair\_Distance Implementation**

The following protoypes were rewritten using OpenMP:

1. block\_all\_pairs (block work distribution)
2. block\_ cyclic\_all\_pairs (block cyclic work distribution)
3. dynamic\_all\_pairs (dynamic work distribution)

All algorithms were tested using 20 threads and a chunkc size of 2 (if the algorithm used a chunk size)

1.1 **block\_all\_pairs**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Matrix Size | 400 | 800 | 10,000 | 20,000 | 30,000 | 60,000 |
| C++ Block | 0.0057173 | 0.0301786 | 4.64917 | 27.305 | 70.9641 | 347.02 |
| OpenMP block |  |  |  |  |  |  |

1.2 **block\_cyclic\_all\_pairs**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Matrix Size | 400 | 800 | 10,000 | 20,000 | 30,000 | 60,000 |
| C++ block-cyclic | 0.0040413 | 0.0178878 | 1.86041 | 8.58314 | 24.1807 | 153.532 |
| OpenMP block-cyclic |  |  |  |  |  |  |

1.3 **dynamic\_all\_pairs**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Matrix Size | 400 | 800 | 10,000 | 20,000 | 30,000 | 60,000 |
| C++ dynamic | 0.0038365 | 0.0123817 | 2.77072 | 9.13156 | 21.7323 | 124.304 |
| OpenMP dynamic |  |  |  |  |  |  |

# 5 Contributions

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# 6 References

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