**Metropolitan State University**

**ICS 440-01 Parallel and Distributed Algorithms**

**Summer 2019 - Assignment 4 Report**

This program seeks to achieve parallel execution of the Floyd-Warshall algorithm, an algorithm that determines the shortest path between all pairs of nodes in a graph (known as the “all-pairs shortest-path” algorithm). Design of this program follows a paradigm whereby the problem itself is partitioned appropriately, the partitions communicate as required, tasks are discovered and communication operations are agglomerated, and finally, the tasks are assigned a proper place in which to execute in the mapping stage.

An intuitive initial partitioning for this algorithm would be to split up the distance matrix into discrete parts, whereby each part can be computed independently of each other. The size of this partitioning may be dependent on other factors, such as communication between other sections of the overall partitioning. This represents a 2-D domain decomposition on the underlying data structure.

**[Communication]**

**[Agglomeration]**

**[Mapping]**

**[Conclusion]**