CSI2110 Programming Assignment 2 Report

Matthew Petrucci

300119235

# **Introduction**

This programming assignment is a continuation of the first programming assignment, where clusters are given that represent points in 3D space that reflect a given environment. We must use data structures we make to cluster these points together depending on their distance to one another and how many points are required to be in a given distance to be considered a cluster. The first assignment used a linear stack as the algorithm to classify the points, while assignment 2 aims to improve the run-time of the stack by implementing a KD tree to hopefully reach a minimum of O(log(n)) time, instead of the linear stack O(n) time.

The data shown in this assignment report will almost always be represented as a contrast between both the linear stack implementation and the KD tree implementation, with the exception of Experiment 3 which does not ask for a comparison between KD and linear times. All data can be seen in their raw format in their respective folders.