

1.4L Own Topic Learning Objectives.

Explanation on how to read these goals:

The dot points are the core learning objectives that I will be covering, these are the ones to be assessed by self and you to ensure I have stuck to my plan. The sub goals denoted by the ‘-‘ are a general overview of *how* I will achieve the learning objectives and what I will cover to achieve this. This structure is not for assessment purposes, and I might not follow it completely as I may find something more important to cover during research. In short, dot points = learning objectives, sub points (-) = how I will achieve these in my report.

TOPIC:

The topic that I have chosen to study in Graph Theory as to me, it is the most interesting and useful in the real world as they are everywhere. Specifically, I plan to study some graph theory algorithms, how to implement these algorithms, what they are doing/how they work, and how to solve real world problems with them.

Objectives and sub-objectives:

- Explore and implement different methods of graph representation.
 - Explore Adjacency list
 - Explore Adjacency Matrix
 - Explore when to use each representation (advantage/disadvantages)
 - Implement them from a picture of a graph.
- Apply graph traversal algorithms like DFS and BFS to explore graphs.
 - Provide an overview of DFS and BFS
 - Explore the differences and when to use each algorithm
 - Apply the algorithm to problems

- Identify each algorithms use case and where we would choose one over the others. Ie. Advantages and disadvantages.
- Apply Dijkstra's and Bellman ford algorithms to compute weighted graphs with both positive and negative weights.
 - Provide a high-level overview of each algorithm and explore how they work.
 - Compare the performance/time complexity of each algorithm
 - Explain when to use each problem
- Identify how to convert theoretical knowledge of algorithms to practise problems
 - Apply the knowledge gained to problems
 - Know how to know what the problem is asking and approach the problem with the most relevant algorithm
 - Apply multiple algorithms to a single problem to deduce which is best
 - Learn to take theoretical knowledge into practice.