COMP3888 - phase 2.1

October 2020

1 Introduction

This documents describes the idea of an assumption that the closest station to a way point is known and given to the algorithm via input files. This can reduce the running time of current algorithm by removing a step of computing respectively for each way point, which is a step that takes up to $O(mn)$ time complexity. NOTE: this assumption might eventually be a distributed computation to terminals.
A new, necessary assumption is also introduced: There is a CONNECTED graph for all charging stations after constraint level check of path lengths.

2 Guidelines

2.1 JSON

The following represents a possible implementation
OLD

```
[0.0,30.1,5],
```

NEW

```
[ [0.0,30.1,5], 11.0 ],
```

The newly added distance to the right is the distance to the closest charging station.

2.2 code

Store information as an attribute

```
class Node:

    def __init__(self, cord,node_type):
        self.cord = cord
        self.last_node = None
        self.paths = []
        self.min_distance = sys.maxsize  # minimum distance from Source to this node
        self.visited = False
        self.node_type = node_type

        # TODO: store distance here
```

Use the known minimum distance to reduce running time

```
    else:
        sub_sum -=new_end_point.get_min_distance() # TODO: something can be faster here?
```