**Introduction**

Protecting environment, reducing the pollution and developing the infrastructure of transport are the main topics of our modern society. Several studies of technique have already found the answer. By the same reason, implementation of informational structure, the communication of the electric network and the development of the electric vehicles lead us to a new era of technology.

However, there are some limits still exist, those limits are caused by the lever of technology, as a result, the range of the electric vehicle is relatively low, and the charging time of the battery is also a problem.

So we have studied the thesis < An efficient Itinerary Management Scheme for Electric Vehicles using ACO > written by Deepika Hooda and Neeraj Kumar form Thapar university, India, and tried to find out a better itinerary management which influenced by three arguments: the distance, the cost and finally the time. The algorithm which they have chosen is ACO (Ant Colony Optimization)

**Goals**

We will summarize their approach, and finally we will try to figure out their merit and demerit in this thesis

**Hypothesis and Limits**

Hypothesis:

- Only one type of vehicle(not difference between vehicles)

- The nodes are the charging points

- There is less than 100 charging stations between the starting point and the ending point

Limits

- The number of the charging station between S and D

- The type of the road (free or paid)

- The travailing time between two stations

- The charging price of a station

- The type of the battery used by EV

**Used approach**

This study uses the algorithm of ACO(Ant Colony Optimization),

The ants always fellow the path which is most optimized for searching resources. The ants normally try several times for collecting resources. And for this algorithm, it will chose the most rapid path and then replace the slower one. For 2 paths which have the same starting point and the same ending point, the ant on the shorter path will return earlier, so it will be more pheromone (2 times) in the this path than the longer path, because at the moment, the ant on the longer path hasn’t come back yet. As a conclusion, the following ant will have less chance to chose the longer path. The scientist have achieved to realize this method with mat, and than, they use this method in the application of the EV.

This function has several arguments: a number of stations, free or paid for each path, the price for passing the path, the traveling time on a path, the charging price of a station, the type of the battery used by EV and a function of probability.

By using function of probability with a node, we can know the probability of leaving from a node to a neighboring node. And the application will chose the path with higher ranger of the probability.

**Result**

**Merit and Demerit**

**Merit:**

**- D**eveloper-friendly, easy to understand

- Inspired by existing algorithm

**Demerit**

**- N**ot dynamic (the arguments and results are fixed)

- Over-calculate (the method doesn’t work with big data)