With the rapid development of autonomous driving technology, there is a growing need for collection and sending of accurate data. Deploying smart lampposts is an ideal and powerful solution. Lammposts can be modified and so are equipped with sensors and wifi access points, the former of which collects data of moving objects and uploads them onto cloud server, and the latter of which downloads the data and sends them to vehicles. The lamppost system can greatly contribute to the L3 Autonomous Driving technology.

Our first model aims at evaluating lamppost modification plans. We include in the factors cost, sensor cover rate, wifi supporting rate (peak/average), and crosswalk cover rate. These factors evaluate the modification plan’s ability to support daily traffic flow and that at the peak of a week.

The second model gets the best modification plan for a given area in Hong Kong. We separate the roads into many sections. According to data from online maps, we calculate the average and peak number of cars in each section, and in turn calculate each’s needed throughput. Finally we can get the best positions of wifi-equipped lampposts using algorithm. Sensors (LiDARs) should cover all crosswalks, and as many road sections as possible, while balancing the total cost.

Then we evaluate our modification plan by our first model. Total cost, sensor cover rate, wifi supporting rate, and crosswalk cover rate are easy to calculate. With data of peak traffic flow from online maps, we can get the wifi supporting rate, both peak one and average one. By all these five factors, we evaluate our model. [evaluation result-114514]