background  
Pilotless aircraft, often referred to as "unmanned aerial vehicle", is abbreviated as "UAV". It is a pilotless aircraft operated by radio remote control equipment , its own program control device, or operated entirely or intermittently by the on-board computers. Since the birth of the aircraft in the early twentieth Century, people have proposed the idea of unmanned aircrafts because of the safety problem of the aircrafts. In 1930s, the British Ferrell company remade a double-fixed wing aircraft into an unmanned drone, which was the first time UVA had entered the history of aviation. Since then, UVA has been used in a lot of domains including aerial photography, news report, wildlife protecting and also performances despite the military use. In a recent UVA show performed by YiHang GHOSTDRONE 2.0, engineers designed a set of intelligent and efficient unmanned aerial vehicle remote control system, which realized the function of using only one computer as a ground control station to autonomously control, monitor the flight task of thousands of UAVs, and set the color change of aircrafts' lights. They presented a large-scale visual feast in the form of fancy lighting show in only 15 minutes.

In our task, our main goal is to organize a beautifully performed light show by using approximately 480 drones and create 3 possible displays. The main challenge is how to minimize the total time the whole performance would take because of the limited time a drone could fly constantly in the sky and how to reduce the total distance that drones would move from one displayed pattern to another.