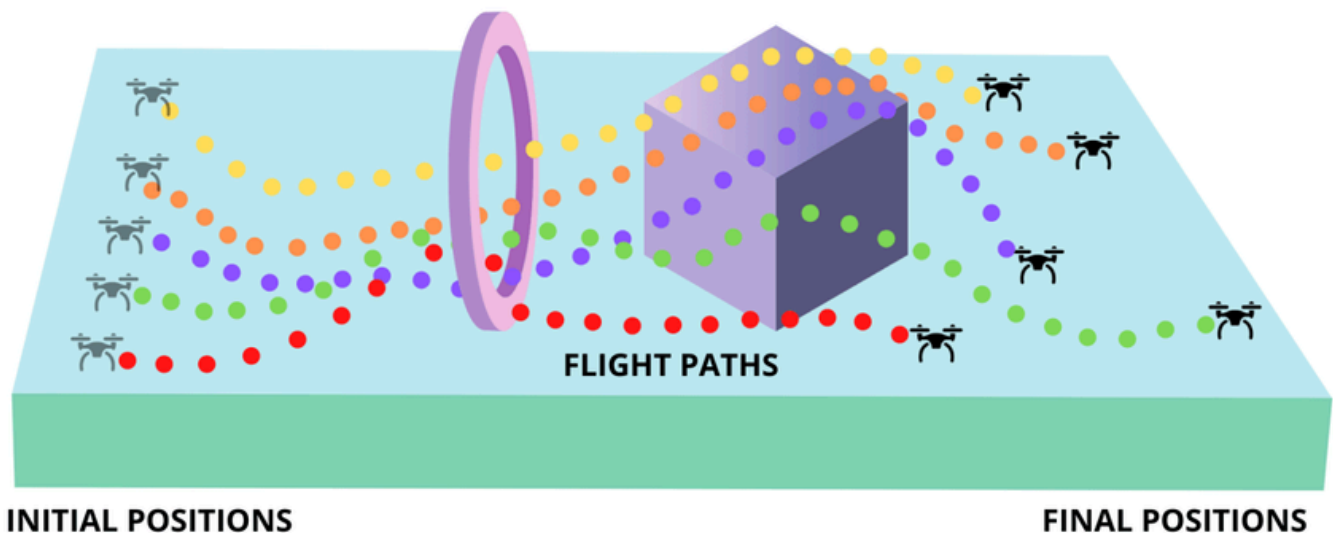




PLANING AND PROCESS OF DRONE LIGHT SHOWS



HOW DO DRONE LIGHT SHOWS WORK?

Many factors go into making [a successful drone light show](#). Factors such as type of drones, design software for choreography, software created for programming them, weather and wind, command communication, LED modules, and batteries all contribute to how they perform.

For a stunning drone light show, drones used must be lightweight and have sharp control. In addition, each drone used to perform a light show should be made from plastic or foam with minimal screws to ensure there aren't any safety risks for the audience watching from below.

A special LED module on each device is what makes it possible for these colorful lights to shine bright against the night sky. Furthermore, each drone used need not contain a lot of sensors, as they are preprogrammed to follow a particular flight path. Drones do, however, contain GPS sensors.

MISSION PLANNING

Designing a mission plan is the longest part of the entire show. It takes anywhere from several weeks to several months to choreograph the movement of hundreds of drones.

There are some challenges when it comes to drone shows that differ from traditional film animation. For example, due to the nature of a drone show, viewers view the live show from any angle. The light show creators need to program the drones to allow them to be seen from every angle simultaneously. Also, they'll have to consider certain variables, such as how fast the drones move and how far away they lap each other to avoid potential collisions mid-flight.

TRAJECTORY PLANNING FOR DRONE SWARM: ITERATIVE PROCESS

Inputs are given to the system, which includes obstacle coordinates, initial positions, and final positions.

Phase 1: Discrete Planning

It includes roadmap generation, conflict annotation, and search-based solving.

Phase 2: Continuous Refinement

Here smoothing of trajectories is done inside safe corridors using quadratic programming (QP) solver.

Phase 3: Iterative Refinement

This includes recomputing of corridors, and solving is done where corridors are recomputed till QP cost converges.

Finally, real-time animation of the final trajectories is done so that there is no collision.

FINAL PREPARATIONS FOR THE SHOW

The next step is the logistics, where the operator has to define the location and time of the show. The show location must be sufficient to accommodate the take-off and landing of all the drones. Other critical preparations include the setup of real-time kinematic (RTK) GPS base stations and a Wi-Fi router to connect all the drones to the central computer. After the drones are prepped, they are placed appropriately on the field.

[Drone technology never fails to amaze us](#) with its continuing growth and reach. It's time people forget about the traditional fireworks shows and make way for drone entertainment!