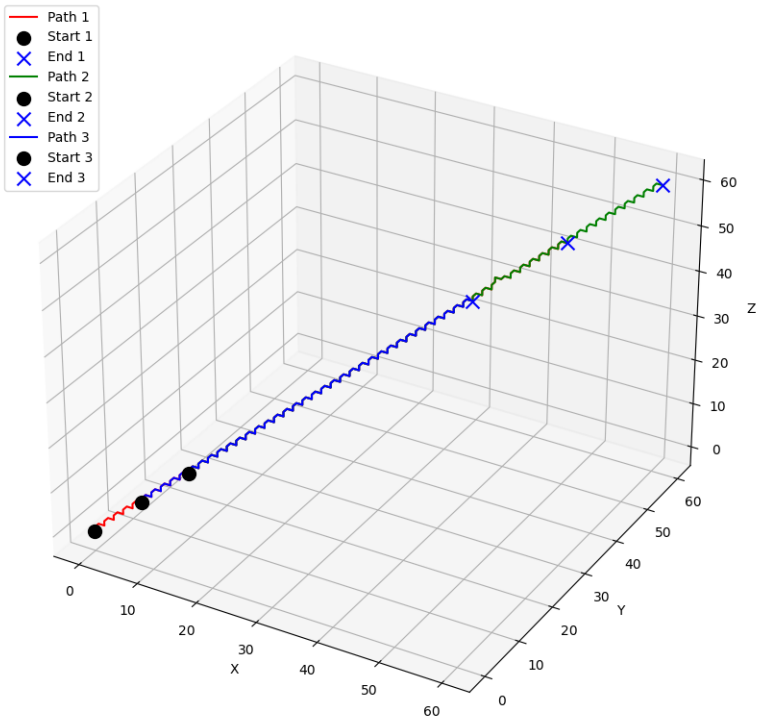
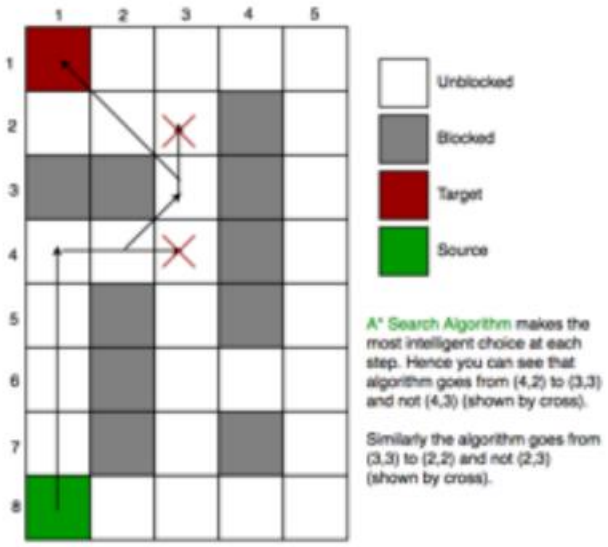
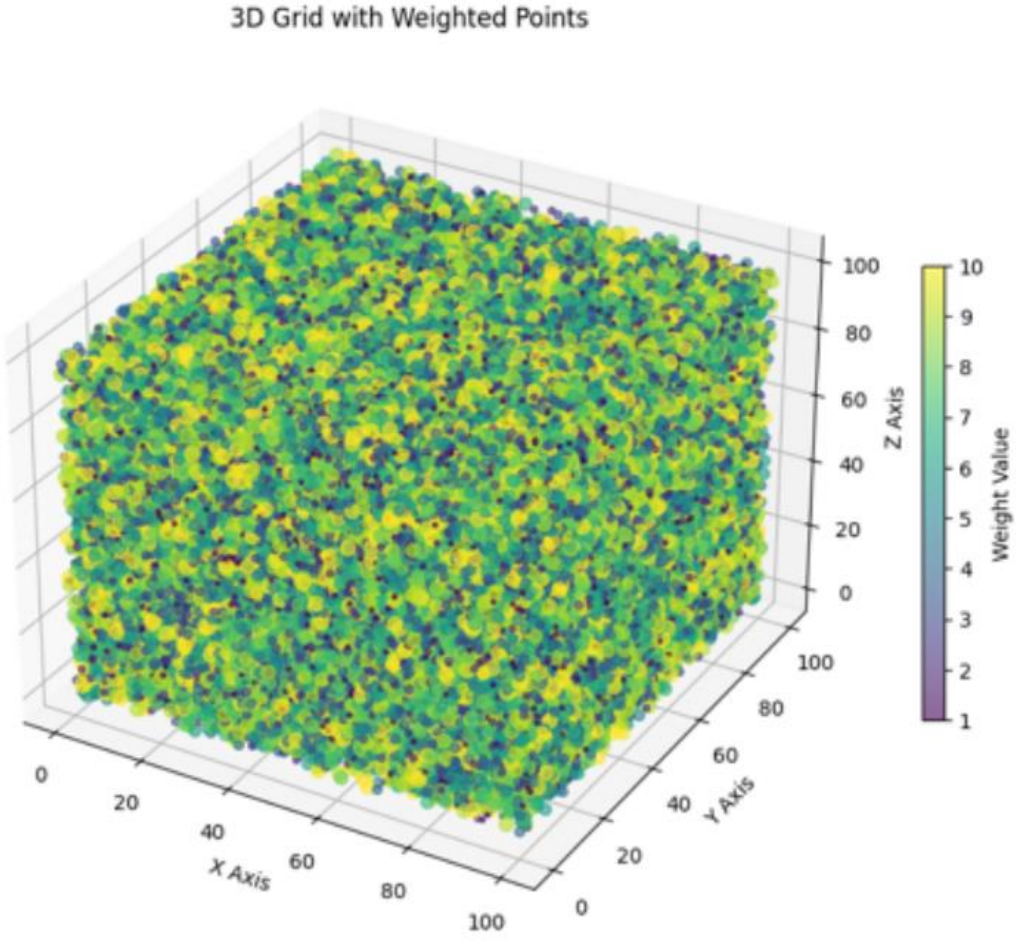
Creating a grid 3D & Assign weight

1. **Generating a 3D Grid of Points (x, y, z):** A Python code is used to create a 3D grid of points ranging from (0, 0, 0) to (100, 100, 100). The grid consists of 101x101x101 points, totaling 1,030,301 points, and is generated using NumPy.
2. **Assigning Weights:** The code assigns weights to the grid, initializing all the weights to 0. Then, 10% of the points are randomly selected to have non-zero weights.
3. **Finding the Shortest Path:** The shortest path is calculated considering the weights of the grid. Two algorithms are used for this:
    - Dijkstra's Algorithm
    - A* Algorithm







The A* Algorithm is employed to compute the shortest path while factoring in the weights. To prevent overlapping paths, time-expanded

collision avoidance ensures that paths do not coincide at the same time. A 3D plot visualizes the path, with each path displayed in a unique color.

Drone in auto mode using way points

1. **Defining Waypoints:** Define 15 waypoints for the drone's flight path. Each waypoint is represented by its latitude, longitude, and altitude.
2. **Planning the Mission in Auto Mode:** The mission is planned in auto mode using Dronekit/PYMAVLink. Upon reaching the 10th waypoint, the drone will add a new waypoint 100 meters perpendicular to its current direction.

   The drone will land at the final waypoint upon completing the mission.