Landing zones decisions

Methods of detecting areas suitable for landing zones for delivery drones:

1. GPS:
   1. GPS can be used to determine client’s current area and for detecting rough landing zone area.
   2. Once client’s approximate area is located, other modules can be used for finding obstacle free landing areas.
2. LIDAR:
   1. LIDAR (Light Detection and Ranging) uses laser pulses to measure distances & create high resolution 3D maps of the environment.
   2. This can detect even small objects and works well in various lighting conditions.
   3. Can be mounted on a drone to scan the landing area and ensure it is flat and free of obstacles.
3. Ultrasonic Sensors:
   1. Used in combination with other sensors for measuring distances from objects in a short-range using sound waves.
   2. Added for redundancy and for conditions when optical sensors might not be optimal.
4. Camera:
   1. In case of failure to automatically find appropriate landing zones by other sensors, a camera mounted on the drone can be activated and monitored from the base to manually find landing zones.
   2. Acts as a failsafe in case sensors are not able to find landing zones.
5. Repositioning:
   1. If no appropriate landing zones are being found in immediate area of the client, this can be communicated with the client using a notification via the app.
   2. This will allow the client to reposition to somewhere else thus providing new options for landing zone.

How to use LIDAR data for mapping the area and finding landing zones: <https://www.mathworks.com/help/lidar/ug/determine-safe-landing-zone-in-aerial-point-cloud.html>