■Introduction:-

➠drone companies such as DJI, Parrot, and 3DRobotics are producing different types of unmanned aerial vehicles (UAVs) or systems (UAS).

➠The wide and rapid spread of UAVs causes danger when the illegal flight of drones is used for crimes such as smuggling.

■Why drone detection required:-

➠ In January 2015, a drone flown by an intoxicated government officer crashed right in front of the White House’s lawn.

➠Another accident happened in 2017 in the Canadian province of Quebec, where during landing, a plane with a light engine crashed into a UAV at an elevation of 450 m.

➠In December 2018, London’s Gatwick Airport was shut down for 36 h with reports of drones over the runway, Because of this incident, approx. 1000 flights had to be cancelled, which affected the lives of 140,000 passengers. Due to low visibility of detection, drones can be ideal tools for illegal smuggling.

➠The given examples of drone incidents show the need to monitor the flight of drones. To guarantee security, some drone producer companies have set up no-fly zones by prohibiting drones from flying within a 25 km radius of a few sensitive zones, such as airports, prisons, power plants, and other critical facilities

■ Working:-

This system makes an 64\*64 pixel cell around the image which is captured by the CCTV and makes it a appropriate clean image of the drone related objects.

- If a drone in a form of bird then our system is observe it’s motion and movement & which place is moving all around so it also gives a alert to authority for this suspicious activity in the prohibited area.

- for finding the distance of drone we use pixel of the picture which is captured by CCTV and if a drone is approaching towards us then pixel is bigger and if it is retrieving then it becomes small.

■Types:-

➠Drone detection technologies are usually divided into four categories: acoustic, visual, radio-frequency signal-based, and radar.

Radar based:-

➠these are mostly designed for detecting high velocity ballistic trajectory targets such as military drones, aircrafts, and missiles, they are not suitable to detect small commercial UAVs that fly with relatively lower non-ballistic trajectory velocities

➠UAVs and birds have key characteristics that often make them difficult to distinguish, the above-mentioned drawback of radar sensors makes it an unprofitable solution for the classification task of UAVs and birds.

Acoustic-Based:-

➠ maximum operational range of these systems remains below 200–250m.

➠It uses array of acoustic sensors or microphones to classify specific acoustic patterns of UAV rotors, even in low visible environments

RF based :-

-popular

-based on RF signature

-environmental noise problem is suppressed by using some de-noising methods such as band pass filtering and wavelet decomposition

Drone detection based on visual data (image or video) can be performed using handcrafted feature-based methods and deep learning-based algorithms.

Handcrafted ex.LBP,HOG,SIFT

Deep learning ex.CNN,YOLO,SSD