

SENSE & AVOID

DRONES

In recent times, unmanned aerial vehicles, commonly known as drones, have significantly enhanced military capabilities. Beyond their military applications, drones have found utility in diverse sectors such as agriculture, filming, and more. Other than flying the aircrafts remotely, the next step with drone technology is to develop self-flying machines. Although the term Unmanned Aerial vehicle (UAV) is used almost interchangeably with “Drone”, it doesn't necessarily mean absence of people on board, it just means the absence of a human pilot. Autonomous UAVs, which don't need to be remote controlled from the ground either, need to be able to sense and avoid potential obstacles and other airborne objects. Such advancements hold great promise for expanding the horizons of aerial exploration and application across various industries.

For this to happen, drones must be able to sense and respond to their immediate surroundings, adjusting their altitude and navigate around obstacles to prevent collisions. This is achieved using various sensors, such as cameras, lidar, radar, and ultrasonic sensors. Once the drone's sensors have detected a potential obstacle, the sense and avoid system must determine the best course of action to avoid a collision and autonomously adjust its flight path to avoid the obstacle.



For instance, they can be employed to inspect electric power lines, reaching locations that would be perilous for human workers. In emergency situations, drones can also play a crucial role in delivering much-needed medical supplies to remote areas, where immediate assistance is essential. Moreover, in the field of agriculture, drones become invaluable tools for data collection and analysis, providing insights on optimal fertilizer and irrigation usage, leading to more efficient agricultural practices.

In conclusion, a drone's sense and avoid system is a complex and sophisticated combination of sensors, algorithms, and decision-making process that work together to ensure the safe and efficient operation of UAVs. As drone technology continues to evolve, we can anticipate even more advancements that will further enhance their capabilities and broaden their scope of application.

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