

Problem Statement

Code:1416

AI BASED AUTOMATIC ALARM GENERATION AND DROPPING OF PAYLOAD AT A PARTICULAR OBJECT THROUGH A DRONE

Leader: A R Pranav Sathya



Work Process

PATROLLING THE
PERIMETER

DETECTING
PEOPLE

SENDING
ALARM

DISPENSING
NEEDS



Detailed Explanation of Work process



- Drones **patrol** on paths generated for maximum coverage in a residence area.
- Checks via **sensors** and **camera** for people in distress and aids them.

-
- The drone processes the data from sensors to check if the person needs help
 - If yes sends **alarm** about it to control room and automates the process of fetching the needs.
 - The package is picked up by the drone and sent out to deliver.

-
- The drone gets to the **target location** and calculates the drop.
 - The package is dropped with precision so that it reaches the person safely.

ALGORITHM

- **Path Planning:**
 - Develop a path planning algorithm that calculates the optimal trajectory for the payload drop. This trajectory considers factors like wind speed and direction.
- **Payload Release Logic:**
 - Implement logic to decide when and where to release the payload based on the drone's position and the target coordinates.
- **Sensors:**
 - Use various sensors, such as accelerometers, gyroscopes, and barometers, to monitor the drone's movement and environmental conditions during the descent.

DETECTION PROCESS

1. Enhanced Search and Rescue:

AI drones are crucial for fast search and rescue in disasters and remote areas.

2. Object Detection Algorithms: These algorithms help drones identify humans in tough conditions, like low light or dense foliage.

3. Thermal Imaging: Thermal cameras on drones find people in darkness or hidden areas by detecting their heat signatures.

Drone Hardware



- **Drone Type:**
 - Choose a drone model specifically designed for heavy payload transport. Multirotor drones (e.g., quadcopters or hexacopters) are commonly used for this purpose due to their stability and payload capacity.
- **Payload Capacity:**
 - Select a drone with a payload capacity that matches the weight of the parcels you intend to transport. Ensure it can carry the parcels safely.
- **Powerful Motors:**
 - Opt for drones equipped with powerful motors that can generate enough thrust to lift and control heavy payloads in windy conditions.
- **Sturdy Frame:**
 - Look for drones with a strong and durable frame construction, typically made of materials like carbon fiber or aluminum. This provides stability and resilience against wind forces.