S.A.R.A

Search And Rescue Assistant

Software Engineering | Group 8

User Documentation

https://abhiek187.github.io/emergency-response-drone/

TEAM MEMBERS

Sahana Asokan
Won Seok Chang
Avnish Patel
Abhishek Chaudhuri
Shantanu Ghosh
Srikrishnaraja Mahadas
Sri Sai Krishna Tottempudi
Vishal Venkateswaran

Table of Contents

1. Overview

Search and Rescue Assistant: This tool will be used to help with accident prevention. This system will provide the location of the drone camera at all times. Features such as thermal and obstacle sensing will be implementation with a thermal camera and ultrasonic sensors. The camera of a mobile device is able to be used to stream video feed to the user on the interface. The battery status of the camera is able to be displayed on the webpage. The camera's current position in terms of latitude and longitude is also displayed.

Important Features:

1. Check Obstacles
2. Real-time View
3. Safe & Durable
4. Easy Access / Ready-to-launch

2. Purpose

S.A.R.A. is used to cover an environment in an efficient and safe manner with minimal need of helicopters and first responders.This system could potentially lead to a increase in the number of victims saved and decrease the number of lives of first responders lost.

3. First Time Users

Installing S.A.R.A is quite simple, since the software for this program is mainly to be featured on a mobile device. A mobile device is needed, because there will be internal sensors measuring different data parameters that are essential to the drone. There is also a main webpage interface where you will be able to access the live feed of the drone. As a user, you will have to download preliminary files and run code to be able to implement the webpage interface. Those files will be provided. You will also need to be able to access the mobile app, and the drone itself to make sure all hardware components are working.

4. Access Control

Once the software is installed and the drone is working, the webpage should also be set up. After this, all the code in regards to the main file should also be running so that the appropriate functions for the drone are in place. The webpage interface is very straightforward and easy to navigate. The following features will be visually updated and presented on the webpage:

- Battery Level - Displays battery level of the device
- Video Screen - Projects the video capture from the camera on the screen
- Location - Displays the exact live location of the drone by latitude and longitude
- Speed - Speed the drone is moving
- Power- Button to turn on and off the video display
- Sensor Data - Proximity of the sensors to the nearest object in cm

These are all the features presented in the webpage interface. The actual software that needs to be implemented will include files related to detection and infrared. There will be software that applies to detection which will provide the ability to detect obstacles with alert, and there will be software that will apply to infrared which will be able to detect heat signatures through the different obstacles.

These software elements will be included with many subelements. These files will provide the appropriate algorithms for location, obstacles, physical data, and reporting. There will be a main file that will integrate all methods and provide the main function for the drone.

5. Installing/Starting the system

Download and run given code on GitHub and access the drone camera here. After webpage is set up run given files and press on the power button on the RC controller to turn on the drone. Run algorithms in regards to the drone to ensure functionality is working in regards to physical data and other listed features.

6. Stopping and Suspending the System

Let the drone settle down and land and then turn off the drone using the off button.