Live Human Detection Drone for Earthquakes, Post Fire and After Explosion

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Abstract— **To design, develop and implement a device (Drone) which will detect the presence of a living being stuck inside the collapsed building or during forest fire where the normal human eye may not reach.**

The natural disaster issues are significantly increasing, as a result many innocent lives are lost. For instance, many big cities like Mumbai are facing frequent collapse in various areas like a building collapse, a bridge collapse, etc. Many parts of India undergo Natural calamities like Earthquake, Flood, Fire in the forest, etc. To save precious lives in such scenarios, a drone is built and being deployed to get precise information about the location of humans, animals in quick time. Video feed can be sent to control room via cellular data or Wi-Fi technology.

Index Terms— **Acknowledgement, List of Figures, List of Tables, Abstract.**

I. INTRODUCTION

The issues of natural disasters are significantly increasing, many innocent lives are lost. Humans are indirectly contributing to the chances of the occurrence of heinous yet natural disasters. Many big cities like Mumbai are facing frequent issues in various areas like a building collapse, a bridge collapse, etc. Significant parts of India undergo natural calamities like earthquake, flood, forest fire, etc.

To save precious lives in such scenarios, a drone is built and being deployed to get precise information about the location of humans, animals in quick time. In the air, unmanned aerial vehicles (UAVs) elongate the senses of the responders by giving a bird's eye view of the situation. Smart camera is used which captures real time image. Video feed can be sent to control room via cellular data or Wi-Fi technology.

In these search and rescue situations, UAVs have various pros over humans. Mainly, UAVs can be sent to any location without going into the target area. This reduces the possibility of rescuer's critical injury or death. Also, using the latest communication techniques and tracking, a drone can scan a large area in a very small amount of time.

Moreover, applicable in following scenarios:
1.   Post-earthquake rescue mission deployment.
2.   Detection of living beings after fire explosion and in floods.
3.   Can be brought into play in animal rescue operation in bushfires.
4.   Finding children lost in fairs or holy yatras.
5.   Finding missing adults.
6.   Video streaming of real-time situation.
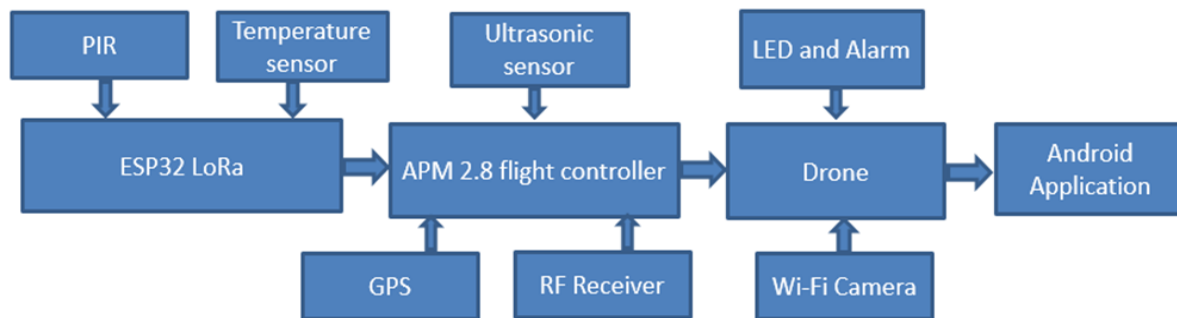
BLOCK DIAGRAM

Figure 1: Block Diagram of Live Human Detection Drone for Earthquakes, Post Fire and After Explosion

The above figure shows the block diagram of the Live Human Detection Drone for Earthquakes, Post Fire and After Explosion. The PIR and Temperature sensor are interfaced with ESP32 LoRa. The ESP32 LoRa is interfaced with APM 2.8 flight controller through telemetry port present at APM. As APM 2.8 flight controller already has a port for Ultrasonic sensor, hence we do not require to interface Ultrasonic sensor with ESP32LoRa microcontroller. The flight controller is connected to APM board which will bind with the transmitter when powered ON. APM is then connected to the remaining components of drone. A Wi-Fi camera is mounted on the drone with LED and Alarm which can be controlled with an Android Application.

FLOWCHART

CONCLUSION

The main purpose of Live Human Detection Drone is for Earthquakes, Post Fire and After Explosion.
With increasing natural calamities, this drone would assist in rescuing each and every living being stuck in the disastrous condition, as far as possible. Also, making it easy for other rescue missions and to combat the crucial and the dominant element i.e. time.
This State-of-the-Art project offers an efficient and safer way by not risking more human (rescuers) lives in danger and ease in rescuing the victims.

APPENDIX

Links of all Datasheets
https://www.electroschematics.com/wp-content/uploads/2013/07/HCSR04-datasheet-version-1.pdf
https://cdn-learn.adafruit.com/downloads/pdf/pir-passive-infrared-proximity-motion-sensor.pdf
https://pdf1.alldatasheet.com/datasheet-pdf/view/517588/TI1/LM35.html
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https://www.ti.com/lit/ds/symlink/lm35.pdf
https://www.rhydolabz.com/documents/26/BLDC_A2212_13T.pdf

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[5]Ahmad Sobri Hashim1*, Mohamad Syafiq Mohamad Tamizi 2 Development of Drone for Search and Rescue Operation in Malaysia Flood Disaster Department of Computer & Information Sciences, Universiti Teknologi PETRONAS Seri Iskandar, Perak, Malaysia.