

# Remote Controlled Delivery Drone For highlands

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## ABSTRACT

In present condition medical aid doesn't reach on time, it affects the human lives. Due to the lack of transportation facilities in highland areas, difficult to provide essential medicines emergency situation. Drones are the best way to eliminate these problems. Existing drones have less flight conditions. our project aims manually operated drone by attaching a camera for the efficient delivery of medicines. exact delivery location can be detected using GPS. These aerial vehicles are much faster than road transportations. The main aim of this project is to introducing a system that can fly to highlands to provide medical aids. This delivery drone can carry emergency medicines in a container and drop the emergency medicines to the exact location.

**Keywords-** GPS, Aerial vehicles, Highland areas, Openpilot CC3D Flight Controller

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## INTRODUCTION

Transportation facilities are one of the real time physical system, The requirement of these system are capable of handling emergency situations well in time. Now a days several peoples are die because medical aids can't reach on time. It can be due to traffic or large area can't be covered in less time. Emergency situation are occurred at any form. Current medical delivery drones have lack of proper thermal insulation systems.

The proposed work consists of some other lightweight materials like polyisocyanurate and poly urethane used instead of polystyrene. A driving cycle which is used to maximize the delivery distance of the drones in certain operating condition. These driving cycle written in Matlab is developed to operate electric motor and propeller data in usable format. We ensure more advanced and improved camera for detecting the obstacles during the flight of drones in the delivery time.

## LITERATURE SURVEY

**A. Carrio, J. Tordesillas, S. Vemprala, S. Saripalli, P. Campoy and J. P [1]** This paper deals with detection of dynamic obstacle Using a small quadrotor they evaluate several flight experiments they demonstrate its capability to determine obstacles. Here they used stereo based camera that runs onboard a small drone at 8m relative position and estimate the potential of obstacles. This works shows the ability of object detection model to recognize the real image and helps safe navigation of drones.

**Bambang Sumantri Ni'am Tamami [2]** This paper deals with development of low cost embedded flight controller (EFCU) is used for making quadcopter. For this purpose there sensor is used for stabilization feedback and also STM32F1038T6 microcontroller used. PID controller designed for stabilizing altitude and attitude position. Instead of 'x' configuration '+' configuration is used due to the advantage of better distribution. Here they used LiPo battery LH12212 brushless motor, propeller 9450 accelerometer sensors are used to correct error measurement from gyroscope. They designed trajectory for takeoff into multistep input. They developed a low cost EFCU for making quadcopter at low cost. They done several flight experiments for evaluation and determine attitude position of quadcopter RSME (Root Mean Square Error) and angular speed of quadcopter is determined.

**Kalyan M.Mangtani, Anket K.Khanorkar, Samrudhi N.Titarme [3]** In this paper they focus to develop a fast and best medical aid given with minimum cost and time. They introduce drone for providing fastest medical delivery. First they create medical application and user can register on this application. They can order and deliver the medicines blood etc. They can select nearest hospital centralised system receive order and reach the destination.

User can pay order online after confirmation drone delivered the medicines and they check the safety features. Live telemetry Path specifies public protection for long distance issues. They will create pre-defined path, They used quadcopter, octacopter, according to the need of medical parcel. First they check requirements that need another way by using image capturing method selection is completed. Payment will be done in online transaction and ordering process done successfully.

**Yusuke Funabashi, Shiga, Ittetsu Taniguchi, Hiroyuki Tomiyama [4]** This paper studies a routing problem of delivery drone which considers load dependent flight speed. Here formally defines Flight Speed Aware Vehicle Routing Problem and proposed a dynamic programming algorithm for FSVRP which is used to ask shortest route for drone to delivery services. The paper also shows the Traveling salesman problem (TSP) through experiments. TSP is evaluated for delivery using drone. The flight time of drones depend on the flight distance, flight speed and speed depends on the payload of the drone. Based on these, a routing algorithm in python is proposed and implemented through several experiments for FSVRP. It is also evaluated and checked the effectiveness in terms of runtime of algorithm, total flight time and total flight distance ordering process done successfully quadcopter is determined.

**A. Josephin Arockia Dhivya, R.J. Hemalatha, T.R. Thamizhvani, Josline Elsa Joseph, Bincy Babu, R.Chandrasekaran [5]** Develops a prototype of drone which reaches an accident spot at right time like an ambulance using various sensors. This type of medical drone helps to decrease the fatal cases, helps in patient's survival and used to save time. Different types of sensors are used in the health drone. Using global positioning system the operator can tracks the exact location when a phone call is given to a prescribed number at critical situation the medical drone reaches the spot and measures various parameters of the body. The information of the patient is given to both hospital sources and the nurses present in the normal ambulance. The flying medical quad copter can reach the accident spot before the normal ambulance arrives the same spot. The actual situation of the patient in real time is also can measure by this drone which helps to save patient's life. The information about the patient's health will be send to the staffs coming in the ambulance and in the hospital which helps the doctors to know about the condition of patient before arriving the spot. It is a flying medical drone which reaches in emergency situations.

**Nayyar Ahammed khan Mohammed Ahamad Dhab Alan [6]** Emergency situations a lot of time take to reach the ambulance services due to traffic. To solve this problem they developed drone to reach accident spot at right time and provide first aid kit. Here a mobile app is developed and integrated with drone. This system capable for providing medical aid without delay. Any registered user or patient himself also request first aid as instantly. GPS is used to find particular location. Using ER diagram they represent Medi drone system. This project main aim to save human life in emergency situations.

**Maxime Perreault and Kamran Behdinin [7]** Delivery drone driving cycle written in Matlab is used to maximize the delivery radius of the drones by modifying their electric motor and propeller parameters. This driving cycle is developed to operate electric motor and propeller data in usable format. A data processing tool is used for the polynomial interpolation. an ideal pitch angle allowed them to displace horizontally. These pitch angle which reduces the energy spend for its two operating conditions. This driving cycle helps them to maximize the delivery distance of the drones under desired operating conditions. It has been written to accommodate unmanned drones that use any number of propellers and perform vertical takeoff and landing procedures. The driving cycle runs through different profiles to find the maximum delivery radius.

**Neel M. Maity [8]** There is a lack of proper thermal insulation system in delivery drones. Due to the lack of thermal insulation it is applicable for short flights. The project analysis if any other lightweight materials such as Polyisocyanurate and polyurethane can be used instead of polystyrene for thermal insulation systems in delivery drones. The drones are modeled as rectangular containers of same thickness for test. Instead of blood products saline solutions are used. Polystyrene, Polyisocyanurate and polyurethane are combined and used for test against a control of polystyrene which is the material used for the drone today. The Polyisocyanurate performs effective thermal insulation material with lowest rate of heat transfer.

## CONCLUSION

Medicine delivery using drones in emergency situations is a popular technology today. Drones take aerial route, so that it is very useful since they are not affected by road traffic. Therefore drones can provide medical aid in emergency situations easily. Delivery of medicines using these types of drones can reach on right time in emergency situation, especially where proper transportation is unavailable. The flying medical quadcopter can reach the accident spot before the normal ambulance arrives the same spot, so that it is helpful to save human's life.

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