

MEDICAL SUPPLIES DELIVERY DRONE

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ABSTRACT

Unmanned Aerial Vehicles, also identified as drones, can play an important role in military and public emergency medicine as a telemedicine. The aim of the study was to present the real possibilities of using them in providing the health related help such as the medicine delivery in the location where vehicles like ambulance can not be present during emergency. Drone can be applied to transport goods on demand, provide blood in town areas, save sinking people, analyze the scale of damages, monitor large human gatherings, perform exploration activities, transport blood samples and other examination of materials, provide automated external defibrillators, support rescue operations and perform various actions. Delivery drones are planned to improve productivity while decreasing the manpower needed for the transportation of goods. Drones also used to transport medicinal products like blood sample, vaccines, pharmaceuticals drugs, and medical appliances. Medical deliveries are able to fly into and out of remote or otherwise inaccessible regions, compared to delivery services or going to medicals. Drones are services to transport medications to emergency situations, town atmospheres or geographically challenging locations are increasingly being utilized to expand drone delivery services.

Keywords: Unmanned Aerial Vehicles, Blood Product, Vaccine, Pharmaceuticals.

I. INTRODUCTION

Drone use in future in the area of healthcare is very thought provoking. Drones that provide services in the emergency conditions, urban environments or geographically-challenging locations are increasingly being utilized to improve the service of medicine delivery, however, there are rare studies on their impact on drug stability[1]. So the question is How can the Biomedical industry best use of this technology to improve safety as well as care of the medicine delivery? There are many areas where the drones already have been tried to deliver the food and medical supplies to the military zones. Drone uses for commercial purposes has gotten much press of late due to Amazon announcing it intends to use drones to deliver packages to customers [7]. If the medical industry use the drone service technology with the help of that commercial industry, The medicine delivery can be achieve very soon. This is a very interesting and transformational idea with many planned and unplanned significances. In the future world, small delivery drones could deliver medical services to the door of a patient from the pharmacy with low cost of time, So eliminating some human steps. This would lead to quicker and less error likely to administration of medications. Nurses as well as pharmacists can work more proficiently as per provisions can be beckoned to the door of patient instead of the time consuming task of collecting the important items. Fast delivery of medicine, medications and medical applications right to the place could overwhelm outbreaks of life-threatening transmissible diseases. Also medical equipment, portable shelter, mobile technology includes the big list of what could be delivered in future in a rapid fashion to areas where critical infrastructure injury would prevent ground or typical air transport. For many situations, drone technology make it very easier and also safer to provide this door step help. When a doctor rounds on a home patient, blood can be strained and immediately sent by drone to the blood examination labs [2]. Suppositories, treatments, antibiotics and ordered by the patient may be delivered to the door step by drone.

Cutting-edge information technology and enhanced information organization the world over are made telemedicine an gradually viable health care facility delivery alternative, measured in economic, technical, clinical activities[3]. Though, most major telemedicine plans, at present, are working in an investigational settings. To a technology stand point, the telemedicine technology contains hardware, software, medical kit and

communications things [4]. The technology infrastructure used in Delivery System is a telecommunication network with input and output devices at each linked location.

II. METHODOLOGY

The drones won't be travelling on the existing features on the map because they only provide navigation through the roads only but medicine delivery drone [Normal Drones] requires a different route that is it have to fly above buildings and reach the location fast compare to the road vehicles. The drones will be provided by diverse direction just like flights. Flights take their own route to travel from one place to another place. The drones will be providing with same path as flight but on minor rule that is inside the city. They will fly over buildings and cover the shortest path to reach to their purchaser.



The GPS satellite sends the radio signal to the device which provisionally stores our data in their system, the device is kept in both the vehicle we drive as well as GPS well-suited device we carry with us that is phone. The device is also providing with the panic button in case of the emergency tracking [5]. The tracking devices are consist a SIM Card and this is used to communicate with the nearer GSM network and therefore the tracking system works with the aid of both GSM networks and Global positioning system. The tracking server uses the software that catches the signal sent by the device which is being followed.

Benefits :

1. Decrease Roadway traffic
2. Condense greenhouse gas emissions.
3. Better route flexibility.
4. Lessen roadways and bridge maintenance cost.
5. It is fast and reliable
6. Very efficient over quick distance.

Limitations :

1. Restricted by package weight.
2. Constrained flight time.
3. Local restriction.

III. MODELING AND ANALYSIS

To making the system for delivering the medicine there will be need for a hardware and electronics components and with the help of this components the system will ready. And this can be achieve in low cost because the components which are use for making drone and tracking system is low cost.

COMPONENTS	SPECIFICATION
Arduino Nano	Microcontroller : ATmega328 Circuit Operating Voltage : 3.3V - 5V (depending on model)
NRF 24L01 PA+LNA	operating voltage : 1.9V to 3.6V
GPS Module	Data output Baud rate: 9600 bps High Sensitivity
IMU - MPU6050	Operating voltage : 3V - 5V

	Communication : I2c protocols
Electronic speed controller	Output : 30Amp Input voltage : 5-12V

IV. CONCLUSION

The aspect of this study is the future of upcoming technology. The manual distribution of medical supplies will not be able to satisfy the demands of patient in the future. Drones will become a need and will be of huge use in delivery of parcels, couriers and the medicine to the particular customers. It is very beneficial to get the medicine through the drone it keeps a lots of time respect to the delivery vehicles. Telemedicine is the application of telecommunications and computer technology to transport health care services from one place to another place. In the upcoming time, people will become so occupied in their own work that they would not have time for getting couriers and parcels separately.

Medicine deliveries are able to fly into and out of remote or otherwise unreachable areas, related to trucks or bikes [6]. The idea of drone delivery come in the mainstream with [Amazon Prime Air] – Amazon.com founder Jeff Bezos' December 2013 announcement that Amazon was preparing fast delivery of lightweight marketable goods using UAVs. Amazon's press announcement was met with skepticism, with apparent hurdles counting with federal and state regulatory agreement, public safety, dependability, distinct privacy, operator drill and certification, security (hacking), payload burglary, and logistical encounters. That's why these medical supplies delivery drones will confirm the correct delivery of patient demands in their existing positions that is wherever they are.

V. REFERENCES

- [1] <https://www.europeanpharmaceuticalreview.com/article/103799/medicine-delivery-drone-safety-and-quality/> "Medicines from the sky: how drones can save lives".
- [2] Lin, S.C., 1999, Applying telecommunication technology to health care delivery, IEEE Eng., in Med. and Biol, 18,4, 28.
- [3] http://www.articlesalley.com/article.detail.php/133304/104/GPS/Communications/11/How_GPS_Tracking_Can_Be_Used.
- [4] Shimizu, K. (1999), Telemedicine by mobile communication, IEEE Engg. in Med. and Biol., 18, 4, 33.
- [5] Raptopoulos, Andreas (June 2013). "No roads? There's a drone for that". TED (conference). Archived from the original on 21 November 2013. Chengwei Liu, Yixiang Chan, Syed Hasnain Alam Kazmi, Hao Fu, "Financial Fraud Detection Model: Based on Random Forest," International Journal of Economics and Finance, Vol. 7, Issue. 7, pp. 178-188, 2015.
- [6] <https://www.dronesinhealthcare.com/>
- [7] Robillard, Kevin; Byers, Alex (2 December 2013). "Amazon drones: Obstacles to the Bezos dream". Politico. Archived from the original on 6 December 2013.