Easy AED: An Autonomous VTOL Emergency Equipment Delivery Drone System

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Every year, six million people die from cardiac arrest in the world with 436,000 victims in the United States alone. This problem is made worse because, in many counties, more than 50% of people live in ambulance deserts, where it takes over 25 minutes for an ambulance to arrive when an AED is recommended to be administered within 5 minutes. This is a significant problem as it leads to unnecessary death. To solve this problem, the team aims to design an on-demand autonomous VTOL (Vertical Takeoff and Landing) hybrid drone (capable of both horizontal and vertical flight) delivery system capable of delivering a battery-powered AED to a GPS location when requested by an app. In order to make this design, the team split the project up into three subsystems: the control subsystem, the communication subsystem, and the structural subsystem. The control subsystem consisted of the autopilot and motor control of the drone. The communication subsystem consisted of the communication between the user to the app to the home base via http protocol to the drone via LoRa (low range radio). The structural subsystem consisted of the aerodynamic design of the drone. The system was able to deliver the payload accurately in a radius of up to 10 miles within 5 minutes. This system should be significantly cheaper than other solutions such as increasing the density of EMTs. After designing a prototype of this system, the team concluded that the design was effective.

Awards Won:
Second Award of $2,000