Multipurpose Drone Delivery System: UAV

Dr.R.V.Babar
Siddhesh Gite[1], Radha Lomate[2], Shruti Jagtap[3], Malay Divekar[4]
[1234]Student of B.E. Information Technology Department,
Sinhgad Institute of Technology,

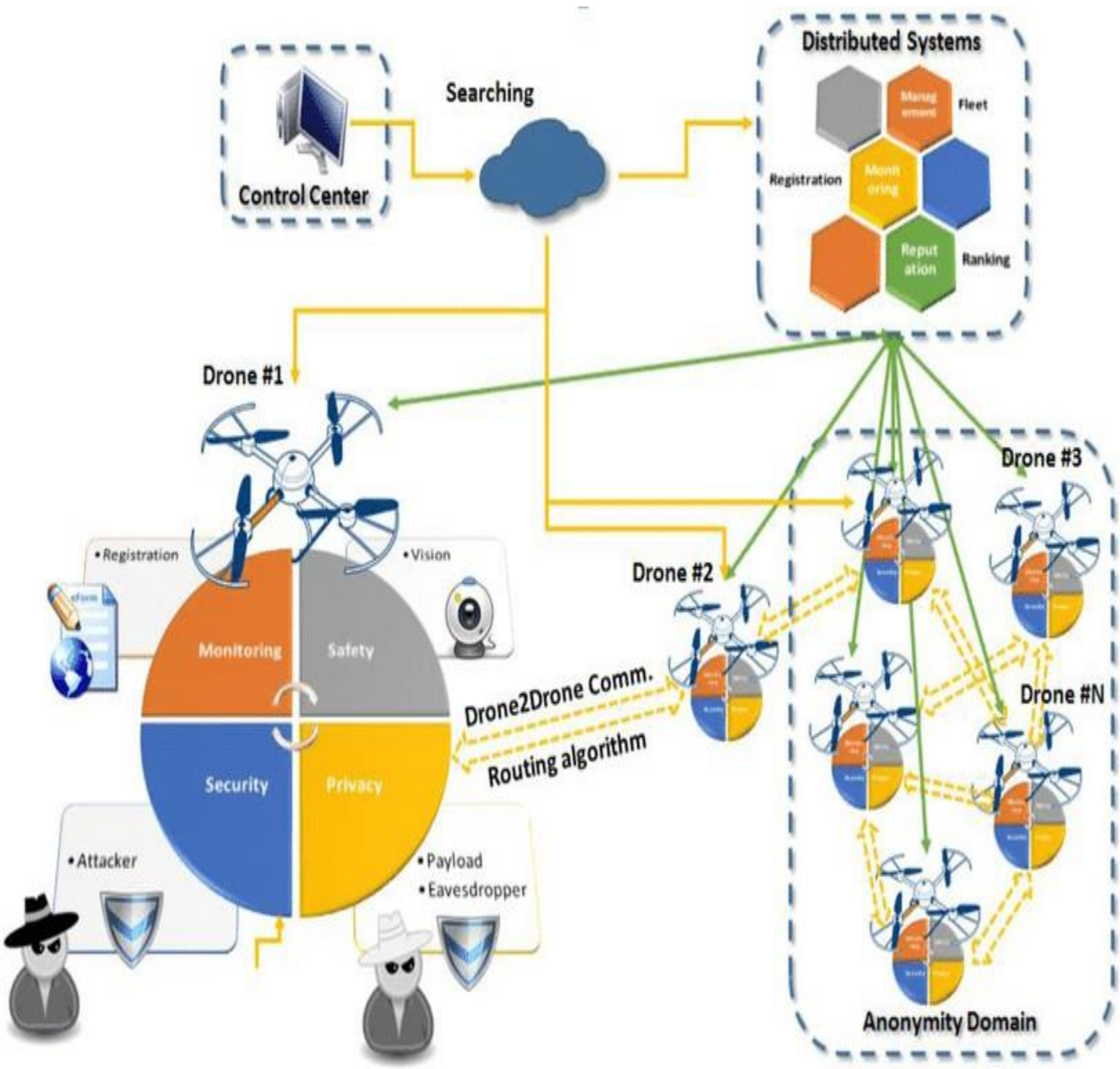
Savitribai Phule Pune University, Lonavala, India

Abstract- Delivery of goods to customers' doorstep has been one of the most crucial parts of online shopping. The companies have been trying to minimize their delivery time and most of them has been able to minimize it to next day delivery or same day delivery. However, when considering delivery of goods such as food, which require instant delivery like under 30 minutes, most of the companies go through difficulties such as limited manpower and increased labour cost. As a solution to the problem, a multipurpose-drone delivery system which will be fully autonomous can be proposed. It will address the delivery time problem and will be able to minimize the delivery time under 30 minutes for any type of goods. To accomplish these goals, a strong network or ecosystem of delivery drones must be established, and design and build a drone that has a sustain greater load capacity and a superior operational range. With the help of a strong ecosystem of drones helps the system to be well connected and become interdependent and cover a vast amount of area. Drones need to have better cargo holding capacity and operational range to sustain this ecosystem. Another challenge of the system is it needs to have a considerably low cost of implementation from large scale to small scale. It should maintain easily and shouldn't be hindered in case any sort of weather phenomenon.

Keywords- Drone, Smart Drone, Autonomous, Online shopping, low cost, secured, unmanned.

Introduction- Drones are basically flying robots, UAV (Unmanned Aerial Vehicle) is technical name of drone. Now a days drone is used for transport of goods called Delivery Drone.This is one of the latest technology used for delivery process, It helps to increase efficiency as well as accuracy. They help to reduce human cost. By using drone there is no need to invest millions of dollars for the entire supply chain process to get the fast and efficient results. Drones are controlled by software or remote with the help of Embedded System integrated with GPS and other sensors.As the demand for commercial deliveries increases within cities, companies face a fundamental limitation in surface road capacity. Drone delivery aims to overcome that limitation by exploiting the vertical dimension above city streets. This report explores the vehicle design aspects of the delivery drone problem, including flight efficiency, energy consumption, noise, and safety, which are central to the viability of delivery drones. Importantly, key design constraints and expected performance levels also speak to the potential scalability of the concept. A brief analysis of the requirements shows that a 10- to 15-mile delivery radius is likely sufficient to cover most of the urban areas. A vertical take off and landing (VTOL) delivery drone can ease operations at the terminal area at a cost to flight efficiency. The limited delivery range and payload requirements, coupled with the power efficiency of electric motors at small scales, make VTOL viable. The relatively scale-free nature of electric propulsion further reduces the cost of mounting separate and optimized cruise and hover motors. This helps to bridge the longstanding gap between good hover and cruise performance in VTOL aircraft (at least for small, short-range applications). To better understand the short-term technical viability and future prospects of delivery drones, we developed and tested a simple delivery drone performance model. The model takes in a host of vehicle and mission parameters and assumptions, chief among which are the aerodynamic, structural, and propulsive efficiencies and the battery energy density. The model is high level, and the parameters are based on analogous systems. We do not attempt to create detailed aerodynamic and structural designs to produce detailed vehicle configurations. Rather, the vehicles are designed against notional mission requirements framed in terms of payload, range, and hover and climb requirements. The primary outputs of interest are the energy consumptions and masses of converged delivery drones, which have been properly sized (including cruise, hover, and reserve flight segments) to carry all the payload and onboard systems. In technical terms, we use fixed-point iterations to converge the empty weight of the drone designs.

System Architecture –



Conclusion- A systematic process of online delivery with an autonomous QC using an interfaced android device as its core processing unit. QC will deliver the parcel to the customer by following Google map which will reduce both time and manpower using for delivery. Battery power will be replaced by solar system as a power source in future. This process will be continued to optimize the cost of delivering products through QC so that poor people can use these systems more easily.

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