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# DRONE CONTROL VEHICLE FOR PROSPECTIVE PROTECTED SHIPPING

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## ABSTRACT

*A Drone control vehicle for prospective protected shipping, which uses techniques such as radar, Light Detection and Ranging (LIDAR), autonomous self cleaning, impulsion equipment, computer vision, 3-D printing and mapping technology, global positioning systems (GPS) to sense its location and to plot a route without human being participation. It uses authentication to authorization communication (A2A) protocol to communicate and distribute information with its neighboring vehicles but data hiding cannot be done. We propose A2A protocol for privacy for information sharing among various areas across the city.*

**Key words:** Drone Vehicles, A2A Protocol, 3-D Printing, Computer Vision, Impulsion Equipment, GPS.

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## 1. INTRODUCTION

Wireless communication is the best answer related to the problems of congestion and pollution. As the world is seeing an unavoidable impact of global warming, it needs to save energy. With the increase in global urban population, the traffic scenario is becoming worse day by day. For communication, it is always better to go wireless. Generally cloud computing is the best answer. Cloud can store a huge data in a protected manner. For communication, different routing algorithms can be used to avoid congestion.

Sensors can be also used to route the traffic (data packet) in a different route whenever the sensor detect congestion.

GPS system can be used to track the position of the traffic. GPS can give accurate position of the traffic up to 10 m, and relative locations to centimeter level or better, P.L.N. Raju. GPS

system has three segments i.e. Space segment, Control segment and user segment, all working towards traffic sensing and correct positioning.

Authorization and authentication protocol is used for communication and routing purpose. This protocol authorizes the correct user, and then only forwards the data packet for shipment. Without its authentication functionality, the source will be identified but the destination will not be authenticated. It forwards the packet based on their MAC address.

Radar is an object-detection system. It uses radio waves to find the various parameters like range, angle, or velocity of objects in motion. Radar consists of a transmitter. The transmitter produces electromagnetic waves in. There is a transmitting antenna, and a receiving antenna. These antennas receive and transmits signals to various object(s). These signals gives information about the speed and direction of the moving objects.

## 2. RELATED WORK

Priyank Sharma *et al* [2011], Cloud is the another synonym of internet. Cloud provides a large storage for data along with data independence. Cloud allows user to communicate with each other e-mails, texts, video calls voice and so on. The basis of this paradigm is Infrastructure as a service (IAAS), Software as a service (SAAS) .This type of communication platform is based on client server model.

Stephen Su [2016], a rapid increase in Global urban population, bestows a negative impact on traffic congestion, pollution, and energy. Scientists are finding ways and means to decrease the negative side effects by trying to make communication wireless. The communication should be authenticated amongst legitimate users. A protocol should be used that will help in transmission of information in the air. The source and the destination should be genuine. This method of wireless communication avoids congestion and reduces pollution. The shortfall of energy is also minimized.

Intelligent vehicles or drone vehicle is based on autonomous vehicle. Autonomous vehicles can be driven without inputs from a driver, though they are manually controlled. They are intelligent system. Their speed is relatively low hence they improve upon road safety. They also reduce congestion on road with reduced vehicle emission. How does an autonomous vehicle work? The answer is quiet simple as it is digitally controlled. Autonomous vehicle is based on high speed internet and an environment of cloud computing. It uses 3D mapping and printing technology to find the traffic scheme of the roads.

Smart systems are based on any technologies and are customized to deliver services based on the need of the sectors. Smart systems are deployed in transportation, health care, manufacturing, energy and the list goes endless. For communication these systems uses their cognitive processing component to decide on the traffic congestion and also identifies legitimate users. They use receivers and transmitters to communicate. They use their sensors to decide on various other parameters. The deployment of Smart systems reduces energy consumption and energy can be saved from their operating environment.

P.L.N. Raju, GPS was initially used for military application. Now their usability is extended to communication as well. GPS system can be used to track the position of the vehicle (data congestion) and divert the traffic elsewhere. GPS has wide variety of uses in environmental monitoring, infrastructure management, navigation technology, and internet portals and so on. 3D printing is a process to create three dimensional objects. It is computer controlled. Irrespective of the shape of the object, it is designed from a 3D model or by using AMF file. This type of file is usually read by a 3D printer. The technique used to create a 3D printing is a CAD model by adding material layer by layer.

Chee-Yee Chong [2003], Networked micro sensors technology is a key technology for the future. A system of networked sensors can detect and track threats (e.g., winged and wheeled vehicles, personnel, chemical and biological agents) and be used for weapon targeting and area denial. Each sensor node will have embedded processing capability, and will potentially have multiple onboard sensors, operating in the acoustic, seismic, infrared (IR), and magnetic modes, as well as imagers and micro radars. Also onboard will be storage, wireless links to neighboring nodes, and location and positioning knowledge through the global positioning system (GPS) or local positioning algorithms.

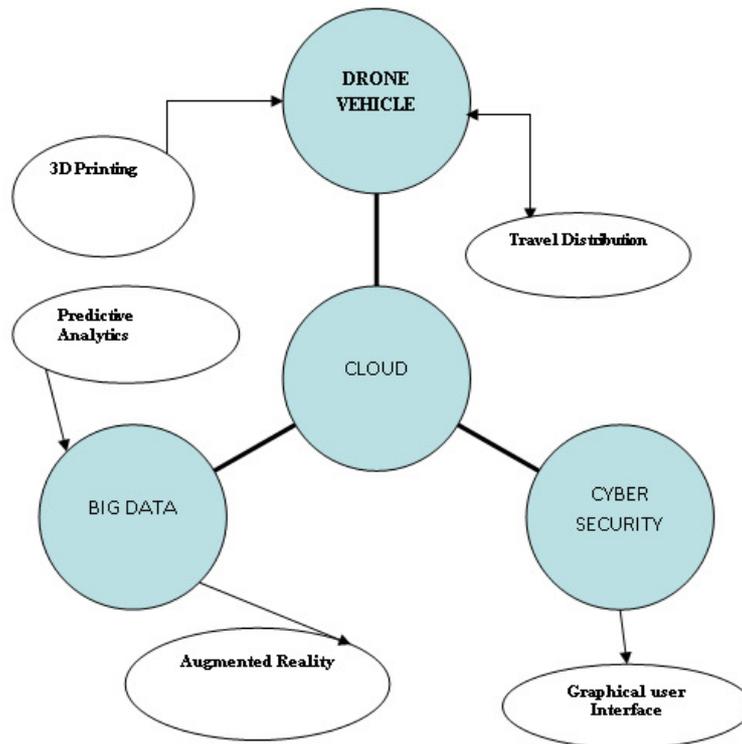
Our proposed system uses the above mentioned technology and comes with the idea of a drone vehicle that uses cloud computing technology for shipment of data.

### **3. PROPOSED SYSTEM**

The proposed system uses Authentication to Authorization communication (A2A) protocol is a transceiver to distribute information across wireless environments among various drone controlled vehicles for shipping. The proposed system uses ring topology, the information transmission, capturing, analyzing, interpreting and retransmission is achieved. The frequency ranges from 200 meters to 500 feet. The management server and transaction servers used to authenticate the certificates sent by certificate agents to identify legitimate users in the vehicles. The certificate issued by after checking by both transaction server and management server to the requesting users to get access to through authentication to authorization communication (A2A) protocol.

The proposed system uses autonomous shipment convoy management, routing, travel distribution, traffic control, smart parking techniques, 3D printing, light weighting, Internet of Things devices, neural networks, artificial intelligence, machine learning, predictive analytics, big data, cyber security, augmented reality, graphical user interface, flexible and fantastic interiors are designed in the vehicles along with entertainment/sleeping/working and safe & easy driving to give an awesome experience while driving the vehicle.

The proposed system offers drone control vehicles for mass transit, rental, maintenance, charging/fueling, multi-modal, vehicle on demand, insurance, leasing, pre-paid, post-paid, sensors, security, rural and urban applications, floor and hull cleaning, logistic systems, cargo, diagnostic systems, fire and disaster systems, defense applications, unmanned aerial, ground and under water systems, vacuuming, elderly and handicap assistance, infrastructure, customization, adaptability, gamification, sustainability, surveillance and identity confirmation.



**Figure 1** Diagrammatic Representation of The Proposed System

#### 4. CONCLUSION

The proposed system works on high speed internet and uses cloud database to store data. As cloud is used as an important platform, the data storage is of huge capacity. Users need not worry for the storage database. A2A protocol is used for transmission and it maintains high degree of privacy. The data is first authorized and then only forwarded. The system uses radar to detect the moving objects based on their speed and angular velocity. The transmitter provides signal to the receiver if all the parameters detected are correct.

The proposed system uses ring topology that can detect signal from a range of 200 meters to 500 feet high. The authentication process is done by authenticating certificates held by legitimate users in the vehicle.

The proposed system uses 3D printing to create images of 3 dimensional objects using CAD-CAM technology. The proposed system is a smart and intelligent system as it uses various artificial and machine learning concepts to be knowledgeable.

It is a drone control vehicle for mass transit and it can be used for various gaming techniques, hull cleaning etc. It provides a high degree of safety and robustness along with scalability with least cost of maintenance.

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