

LEVERAGING BLOCK CHAIN TECHNOLOGY FOR UAV APPLICATIONS

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ABSTRACT

Blockchain technology and the Internet of Things (IoT) are two of the most disruptive and innovative technologies that have the potential to revolutionize various industries. When combined, they can create a powerful tool for unmanned aerial vehicle (UAV) applications. The use of UAVs is growing rapidly, and with it comes the need for secure and efficient data management. Blockchain technology can provide a decentralized and tamper-proof data management system, while IoT can enable real-time data collection and communication. UAVs can be used in various applications such as surveillance, agriculture, search and rescue, and delivery services. However, one of the major challenges in these applications is the secure and efficient management of the data collected by the UAVs. Blockchain technology can address this challenge by providing a secure and decentralized ledger to store and manage the data. The decentralized nature of blockchain ensures that the data is not controlled by a single entity, thereby making it

more secure and less prone to hacking or tampering. IoT can be used to enable real-time communication and data collection between the UAVs and the blockchain network. This can be achieved by equipping the UAVs with IoT sensors and devices, which can collect and transmit data to the blockchain network. The data can then be stored and managed securely on the blockchain, while the UAVs continue to collect and transmit data in real-time. The combination of blockchain technology and IoT can also enable smart contracts to be used in UAV applications. Smart contracts are self-executing contracts with the terms of the agreement between buyer and seller being directly written into lines of code. They can be used to automate various processes in UAV applications, such as the delivery of goods or the payment for services rendered. The use of blockchain technology and IoT in UAV applications has the potential to revolutionize the industry by providing a secure and efficient data management system. The combination of these technologies can enable real-time data collection and communication, while also providing the

ability to automate various processes through the use of smart contracts.

I.INTRODUCTION

The integration of unmanned aerial vehicles (UAVs) into various industries has increased significantly over the years. These UAVs are being used in a wide range of applications, such as surveillance, agriculture, search and rescue, and delivery services. However, one of the challenges that come with the use of UAVs is the secure and efficient management of the data collected by them. This is where blockchain technology and the Internet of Things (IoT) can play a crucial role. Blockchain technology can provide a decentralized and tamper-proof data management system, while IoT can enable real-time data collection and communication. In this paper, we will explore the benefits of leveraging blockchain technology and IoT for UAV applications and how it can revolutionize the industry by providing a secure and

efficient data management system. We will also discuss the potential use of smart contracts in UAV applications and how they can automate various processes.

UNMANNED AERIAL VEHICLES (UAV)

Unmanned aerial vehicles (UAVs), or drones, have become increasingly popular in various industries due to their ability to collect and transmit data in real-time. However, the use of

UAVs also presents challenges in terms of secure and efficient data management. Blockchain technology can provide a solution to these challenges by creating a decentralized and tamper-proof data management system. The ways UAVs can leverage blockchain technology is through the use of smart contracts. Smart contracts are self-executing contracts with the terms of the agreement between buyer and seller being directly written into lines of code. They can be used to automate various processes in UAV applications, such as the delivery of goods or the payment for services rendered. For example, a smart contract can be created to automate the process of delivering goods using a UAV. The contract can include the details of the delivery, such as the destination, delivery time, and payment. Once the UAV reaches its destination, the smart contract will automatically execute the payment, thereby eliminating the need for intermediaries and reducing transaction costs. Another way UAVs can leverage blockchain technology is through the use of a decentralized data management system. Blockchain technology provides a tamper-proof and secure way to store and manage data collected by UAVs. This can be especially important in applications such as surveillance, where the data collected needs to be kept confidential and secure. By using blockchain technology, the data can be stored in a decentralized manner, meaning it is not controlled by a single entity, making it more secure and less

prone to hacking or tampering. The leverage blockchain technology to enable real-time communication and data collection through the use of IoT devices. By equipping UAVs with IoT sensors and devices, data can be collected and transmitted in real-time to the blockchain network. This enables real-time data analysis and decision-making, which can be critical in applications such as search and rescue. The combination of blockchain technology and UAVs has the potential to revolutionize various industries by providing a secure and efficient data management system. Through the use of smart contracts, a decentralized data management system, and real-time communication enabled by IoT devices, UAVs can become even more powerful tools in various applications.

BLOCKCHAIN

Blockchain technology can provide a secure and efficient data management system for unmanned aerial vehicles (UAVs). UAVs are becoming increasingly popular in various industries due to their ability to collect and transmit data in real-time. However, the current data management systems for UAVs are not always secure and efficient. Blockchain technology can address this challenge by providing a decentralized and tamper-proof data management system.

The ways blockchain technology can be used for UAVs is by providing a decentralized ledger to

store and manage the data collected by the UAVs. The decentralized nature of blockchain ensures that the data is not controlled by a single entity, making it more secure and less prone to hacking or tampering. This can be especially important in applications such as surveillance, where the data collected needs to be kept confidential and secure. Another way blockchain technology can be used for UAVs is through the use of smart contracts. Smart contracts are self-executing contracts with the terms of the agreement between buyer and seller being directly written into lines of code. They can be used to automate various processes in UAV applications, such as the delivery of goods or the payment for services rendered. This can reduce the need for intermediaries and streamline the transaction process. Blockchain technology can also enable real-time communication and data collection between UAVs and the blockchain network. This can be achieved by equipping UAVs with IoT sensors and devices, which can collect and transmit data to the blockchain network. The data can then be stored and managed securely on the blockchain, while the UAVs continue to collect and transmit data in real-time. The use of blockchain technology for UAVs has the potential to create a powerful tool for various industries. Through the use of a decentralized data management system, smart contracts, and real-time communication enabled by IoT devices,

UAVs can become even more efficient and secure in their data management capabilities.

II .LITERATURE SURVEY

- 1) This paper exhibits a Blockchain-based design for our current Electronic Health Records (EHR) frameworks. Electronic Health details are frequently comprised of incredibly sensitive and perilous patient details. It needs to track all the events that occurred in the records to achieve data integrity for secure transactions.
- 2) This article examines the acceptance of IoT in numerous fields and its applications to automate and enhance living circumstances, as well as the security and privacy threats associated with the organization and operation of various IoT components.
- 3) We present HealthTrust, which is a generic and extensible authentication mechanism for dispersed medical devices in the setting of several institutions. HealthTrust uses blockchain as a foundation with smart contracts and secure authentication to achieve regulated transmission and secure exchange of healthcare data across organizations.
- 4) We propose Two Chain, a blockchain-based 2FA system for web services to overcome those issues. Our approach enables a more secure, disposable, and decentralized alternative 2FA method. Finally, we make Two Chain available to the public.
- 5) This study aimed to explore the prospects of utilizing blockchain and smart contracts as empowering technologies for food supply chain management. The study used a case study approach. Blockchain technology has the potential to be critical in practically every area of the future.
- 6) We first study the WSP selection problem of vehicles by evolutionary game. The blockchain is then made public to automobiles in order to preserve its decentralization and improve its security by crowdsourcing idle computer power from vehicles.
- 7) The future Urban Air Mobility we expect a highly frequented urban air space with many autonomously flying unmanned aircraft, often called drones. A comprehensive and consistent information exchange amongst all airspace users based on direct Drone-to-Drone communication will be needed in order to limit the danger of mid-air collisions in high density drone scenarios.
- 8) Our approach enables a more secure, disposable, and decentralized alternative 2FA method. Finally, we make Two Chain available to the public. The public's perspective of drones now is dual: it understands both their value and the threat they pose. Drone significance and viewpoints are understandable, but risks are not.

- 9) This research examines extremely efficient drone deployment in a retail buy delivery system based on drones. This distribution method separates an outlet into many regions, each with its own collecting point where shoppers' purchases are gathered.
- 10) We demonstrate Drone Brush, a mixed reality interface prototype for immersive drone path planning for activities such as collaborative photogrammetry and inspection. This interface makes advantage of Microsoft's HoloLens 2 to enable users to sketch 3D routes for drone navigation using hand gestures.

III.EXISTING SYSTEM

The collection of agricultural field sample sets must normally be done in accordance with the crop development cycle, and significant volumes of data are difficult to get. Data labelling frequently takes time and effort for specific crop detection challenges. Focusing at the challenge of recognising unmanned aerial remote sensing chilli pictures, this research provides a chilli image identification framework that consists primarily of three stages. The classifier is created first, then the remote sensing picture is automatically cut to create the sample set. The SVM classifier is then trained. The second step is the detecting procedure. The input picture is segmented into superpixels to produce candidate areas, which are then categorised using a

classifier to finish the process. To complete the detection process, the input picture is divided into superpixels to produce candidate areas, which are then identified using a classifier. Lastly, the detection results are fine-tuned using the template matching approach, and the sample set is updated with a portion of the detection result in chilli image patches.

The growth of unmanned aerial vehicle-based services in traffic surveillance, military defines, disaster prevention, logistics, and agriculture has sparked interest. The key feature of these services is that they are more effective when provided by a group of UAVs rather than a single UAV. Furthermore, in order to broaden service supply, several varieties of UAVs, rather than UAVs of a single type, should be able to coexist in the same service. To efficiently deliver the same services to different types of UAVs, a common platform is required, and services must be given on that platform. To overcome this issue, a platform based on the oneM2M global standard is being investigated, which provides an Internet of Things (IoT) service layer for internationally compatible IoT solutions. We describe a UAV management and control system based on a worldwide standard-based platform. In addition, as an example of a service leveraging the platform, we created an automated UAV-based surveillance system.

DISADVANTAGE

- A blockchain system for UAV applications can be complex and require specialized technical expertise. This can make it difficult for some organizations to adopt this technology.
- The processing speed of blockchain transactions can be slower compared to traditional data management systems, which may impact the real-time data collection and communication capabilities of UAVs.
- A significant amount of energy to run, which can be a concern for UAVs, which need to be lightweight and energy-efficient.

IV. PROPOSED SYSTEM

The use of Unmanned Aerial Vehicles (UAVs) is increasing rapidly in various industries, including logistics, agriculture, defines, and infrastructure. The ability to collect and transmit data in real-time from UAVs is crucial for ensuring efficient and effective operations. However, there are several challenges associated with UAV data management, including data security, privacy, and accountability. One potential solution to these challenges is the integration of blockchain technology and the Internet of Things (IoT) devices into UAV operations. By leveraging these technologies, a proposed system can be developed that can provide secure, transparent, and accountable management of UAV data. This system can consist of UAVs equipped with IoT

devices that can collect and transmit real-time data, a blockchain-based data management system that can ensure data integrity and immutability, smart contracts that define the terms of UAV operations, and a monitoring and control centre that can receive real-time updates and optimize UAV operations. In this paper, we will explore the potential benefits of leveraging blockchain technology and IoT devices for UAV applications, and propose a system that can provide secure, transparent, and accountable management of UAV data. We will also discuss the potential applications of this system in various industries, including logistics, agriculture, defines, and infrastructure.

The use of blockchain technology and IoT (Internet of Things) devices can be leveraged for UAV (Unmanned Aerial Vehicle) applications in a proposed system that can help monitor and manage the UAV fleet more efficiently. The proposed system can consist of the following components: UAVs equipped with IoT devices: The UAVs can be equipped with IoT devices that can collect and transmit data in real-time, such as their location, altitude, speed, battery level, and other relevant parameters. Blockchain-based data management system: The data collected from the UAVs can be stored on a blockchain-based data management system that can ensure data integrity and immutability. This system can be used to securely store and manage the UAV data, making it more transparent and accountable. Smart

contracts can be used to define the terms of the UAV operation, such as the mission goals, flight path, and landing location. These contracts can be executed automatically once the mission is completed, ensuring that all the terms are met. The system can have a centralized monitoring and control centre that can receive real-time updates from the UAVs and monitor their operations. The control centre can use the data collected from the UAVs to optimize their flight paths, detect and resolve issues in real-time, and ensure that the UAVs are operating according to the defined terms.

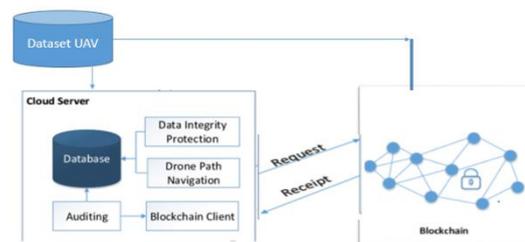
ADVANTAGE

- Improved Security for UAV applications by ensuring that the data recorded on the blockchain is tamper-proof and cannot be altered. This makes the UAV system more secure and trustworthy, as all the data is recorded on an immutable ledger that cannot be manipulated.
- The use of blockchain technology can provide increased transparency by allowing all parties involved in the UAV transaction to access the same information. This makes the system more transparent, as all parties can track the entire process, from the loading of the package to the delivery.
- The use of smart contracts can automate the entire process, reducing the time required for manual processing. This makes the system

more efficient, as the entire process can be completed in a shorter amount of time.

- The use of blockchain technology can help reduce costs by eliminating the need for intermediaries and reducing the time required for manual processing. This makes the system more cost-effective, as it reduces the costs associated with manual processing and intermediaries.

SYSTEM ARCHITECTURE



V. MODULE LIST

- Registration
- Data collection
- Cryptographic function
- Block chain computing
- Performance evaluation.

VI. CONCLUSION

In conclusion, the use of blockchain technology for UAV (Unmanned Aerial Vehicle) applications can bring about several benefits, including enhanced security, increased transparency, and improved accountability. These benefits can be

further amplified by leveraging the Internet of Things (IoT) technology, which can help in collecting and transmitting data from the UAVs in real-time. The integrating IoT devices with blockchain technology, UAV systems can have a secure and transparent way to record and manage data. This can help in creating a more efficient and trustworthy system, which can be applied in various industries, including logistics, e-commerce, and healthcare, to name a few. The use of blockchain technology and IoT devices can help track the entire supply chain process, from the manufacturer to the end consumer, with real-time updates on the location and condition of the packages. In healthcare, the use of blockchain technology and IoT devices can help monitor patients remotely, allowing doctors to receive real-time updates on their health condition. Inleveraging blockchain technology for UAV applications using IoT can bring about several benefits, including improved security, increased transparency, improved accountability, faster processing, reduced costs, and real-time data updates. This can lead to the development of more efficient and trustworthy UAV systems that can be applied in various industries, making them more efficient, secure, and reliable.

VII. REFERENCE

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