International Scientific Journal of Engineering and Management
Volume: 03 Issue: 06 | June – 2024
An International Scholarly || Multidisciplinary || Open Access || Indexing in all major Database & Metadata
ISSN: 2583-6129
DOI: 10.55041/ISJEM02028

SKYCUISINE: A SUSTAINABLE APPROACH TO DRONE-BASED FOOD DELIVERY

JAYAKUMAR.J[1], HARISH.C[2], RAMKUMAR.A[3] ,UMARDHEEN.A[4]. MOHAMMAD ASIF.J[5]

[1]*Mechanical Engineering Department & M.A.M. College of Engineering and Technology-Trichy*
[2]*Mechanical Engineering Department & M.A.M. College of Engineering and Technology-Trichy*
[3]*Mechanical Engineering Department & M.A.M. College of Engineering and Technology-Trichy*
[4]*Mechanical Engineering Department & M.A.M. College of Engineering and Technology-Trichy*
[5]*Mechanical Engineering Department & M.A.M. College of Engineering and Technology-Trichy*

Abstract - Sky Cuisine introduces a ground-breaking paradigm shift in food delivery by adopting a sustainable drone-based approach that seamlessly integrates cutting- edge technology. The system's key features include obstacle detection sensors to ensure safe navigation during delivery, significantly enhancing the reliability and safety of the entire process. Complementing this, a sophisticated webcam monitoring system provides real-time visuals, allowing operators to oversee the delivery and address any potential issues promptly. Additionally, the GPS location of the drone is shared through an Internet of Things (IoT) app, enabling users to track their deliveries in real-time. This comprehensive integration of obstacle detection, webcam monitoring, and GPS tracking not only guarantees efficient and secure food delivery but also reflects a commitment to sustainable practices, marking a significant advancement in the realm of drone-based services. In Sky Cuisine's innovative system goes beyond conventional food delivery methods, leveraging state-of-the-art technology to create a holistic and sustainable approach. The fusion of obstacle detection, webcam monitoring, and GPS tracking ensures a safe and efficient delivery process, providing users with real-time visibility into their orders. This pioneering solution not only transforms the landscape of food delivery but also sets a new standard for environmentally conscious and technologically advanced services in the domain of drone-based logistics.

[key words -obstacle detection for ultrasonic sensor, latitude and longitude value of gps location and iot app displayed]

1.INTRODUCTION

In the ever-evolving landscape of food delivery, Sky Cuisine emerges as a trailblazer by introducing a revolutionary and sustainable drone-based approach to redefine the way we experience culinary convenience. At the core of this innovation is a meticulous integration of cutting-edge technology, aimed at delivering not just meals but a seamless and secure service. The implementation of obstacle detection sensors is a testament to Sky Cuisine's commitment to safety, ensuring that each delivery is conducted with precision and reliability. This advanced feature not only enhances the overall reliability of the delivery process but also reflects the company's dedication to leveraging technology for the betterment of user experience. Complementing the obstacle detection sensors is a sophisticated webcam monitoring system that adds a layer of real-time oversight to the entire delivery operation. This enables operators to address potential issues promptly, ensuring a smooth and efficient service. The incorporation of such monitoring technology not only elevates the reliability of the delivery system but also enhances the transparency of the entire process, fostering a sense of trust and confidence among users. Furthermore, the integration of GPS tracking through an Internet of Things (IoT) app empowers users to track their deliveries in real-time, adding a new dimension of convenience and accessibility to the culinary journey. In Sky Cuisine's innovative approach transcends the conventional boundaries of food delivery, ushering in a new era of efficiency, safety, and sustainability. By seamlessly combining obstacle detection. 2 webcam monitoring, and GPS tracking technologies, the company not only addresses the challenges of modern logistics but also sets a pioneering standard for environmentally conscious drone-based services. As the culinary world embraces this transformative model, Sky Cuisine stands as a beacon of progress, reshaping the future of food delivery with a harmonious blend of technological prowess and sustainable practices.

2. FOOD DELIVERY SYSTEM

The integration of drones into the food delivery system represents a transformative leap forward in the industry, introducing a new level of efficiency and innovation. Unlike traditional methods reliant on human drivers, drone-based food delivery leverages unmanned aerial vehicles to transport meals from restaurants to customers. This aerial approach significantly reduces delivery times, overcoming the limitations of ground-based transportation and traffic congestion. The incorporating drones into the food delivery system is the ability to navigate through obstacles with precision. Advanced obstacle detection sensors enable drones to identify and avoid objects in their path, ensuring a safe and reliable delivery process. 6 This not only enhances the security of the operation but also allows for the seamless navigation of urban landscapes, where traditional delivery vehicles may face challenges. Furthermore, the use of drones introduces a

ISSN: 2583-6129
DOI: 10.55041/ISJEM02028

heightened level of automation and efficiency. These unmanned vehicles can follow predetermined routes, guided by GPS technology, to reach their destinations with unparalleled speed and accuracy. Real-time monitoring through sophisticated webcams adds an extra layer of oversight, enabling operators to supervise deliveries and address any potential issues promptly. The result is a streamlined and technologically advanced food delivery system that not only meets the demands of modern consumers but also sets a new standard for speed, precision, and reliability in the industry. The pioneering efforts of services like Sky Cuisine exemplify the potential of drone technology to revolutionize the way we experience and delivery.

3.EXISTING SYSTEM

The food delivery industry has grown rapidly in recent years, with many people opting to order food from their favorite restaurants using mobile applications. This paper presents the development of a food delivery application using Java, which allows users to order food from their preferred restaurants and track the delivery process in real-time. The application is designed using a ModelView-Controller (MVC) architectural pattern and incorporates various features such as user registration, menu browsing, ordering, and payment processing. The application has been tested for its functionality, usability, and security, and the results are presented in this paper.

4. PROPOSED SYSTEM

In response to the escalating demand for food delivery services, this paper introduces the creation of a Java-based food delivery application. The application is meticulously crafted following the Model- View-Controller (MVC) architectural pattern, providing users with a seamless experience to order their preferred meals from favored restaurants. The system encompasses a range of features, including user registration, menu exploration, order placement, and realtime tracking of the delivery process. To ensure a robust and reliable application, extensive testing has been conducted, evaluating its functionality, usability, and security aspects. The outcomes of these assessments are thoroughly discussed and presented in this paper, contributing valuable insights into the efficiency and reliability of the developed food delivery application

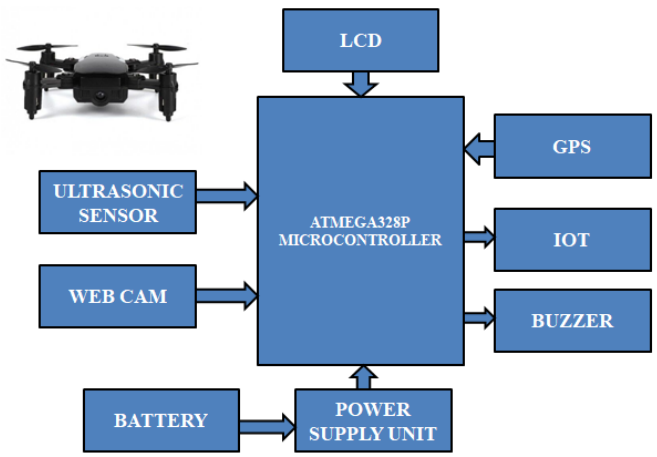

Fig -1Main Parts Drone for Food Delivery

3. CONCLUSIONS

In conclusion, Sky Cuisine's drone-based food delivery system, fortified with advanced technologies. The seamless integration of these components not only ensures the safety and reliability of the delivery process but also elevates the user experience to new heights. By leveraging cutting-edge solutions for obstacle detection, real-time monitoring, and location tracking, Sky Cuisine not only addresses the challenges inherent in drone-based services but sets a new standard for efficiency, transparency, and sustainability in the evolving landscape of food delivery. As technology continues to shape the future of the food industry, Sky Cuisine's comprehensive approach underscores the potential for innovation to redefine conventional practices. The amalgamation of robust hardware and smart connectivity not only streamlines the delivery process but also reflects a commitment to delivering culinary delights with a focus on safety, efficiency, and environmental responsibility. Sky Cuisine stands as a beacon of progress in the integration of technology into the culinary world, presenting a model that not only ensures the timely arrival of meals but also heralds a transformative era in sustainable and technologically advanced food delivery services.

REFERENCES

1.Liu, Z.; Li, X.; Khojandi, A. The flying sidekick traveling salesman problem with stochastic travel time: A reinforcement learning approach. Transp. Res. Part E Logist.Transp. Rev. 2022, 164, 102816.
2.Jeon, A.; Kang,J.;Choi,B.; Kim,N.;Eun,J.;Cheong,T. Unmanned Aerial Vehicle Last- Mile Delivery Considering Backhauls. IEEE Access 2021, 9, 85017–85033
3.Benarbia, T.; Kyamakya, K.A literature review of drone-based package delivery logistics systems and their implementation feasibility. Sustainability 2022, 14, 360
4.Jeong, H.Y.; Song, B.D.; Lee, S. The Flying Warehouse Delivery System: A Quantitative Approach for the Optimal Operation Policy of Airborne Fulfillment Center. IEEE Trans. Intell. Transp. Syst. 2021, 22, 7521–7530.
5. Liu, Y.; Liu, Z.; Shi, J.; Wu, G.; Pedrycz, W. Two-Echelon Routing Problem for Parcel Delivery by Cooperated Truck and Drone. IEEE Trans. Syst. Man, Cybern. Syst. 2021, 51, 7450–7465.
6.Carsten Hirschberg, Alexander Rajko, Thomas Schumacher and Martin Wrulich, The changing market for food delivery, November 2016.
7.Food Delivery App Graphical Flow, October 2018. M. Markovic, P. Edwards, M. Kollingbaum, and A. Rowe, “Modelling provenance of sensor data for food safety compliance checking,” in Provenance and Annotation of Data and Processes, M. Mattoso and B. Glavic, Eds. Cham: Springer International Publishing, 2016, pp. 134–145.
8.M. Markovic and P. Edwards, “Semantic stream processing for iot devices in the food safety domain,” Proceedings of Semantics 2016,

ISSN: 2583-6129
DOI: 10.55041/ISJEM02028

BIOGRAPHIES (Optional not mandatory)

Working as a assistant professor in M.A.M. College of engineering and technology -Trichy. My area of specialization is manufacturing.