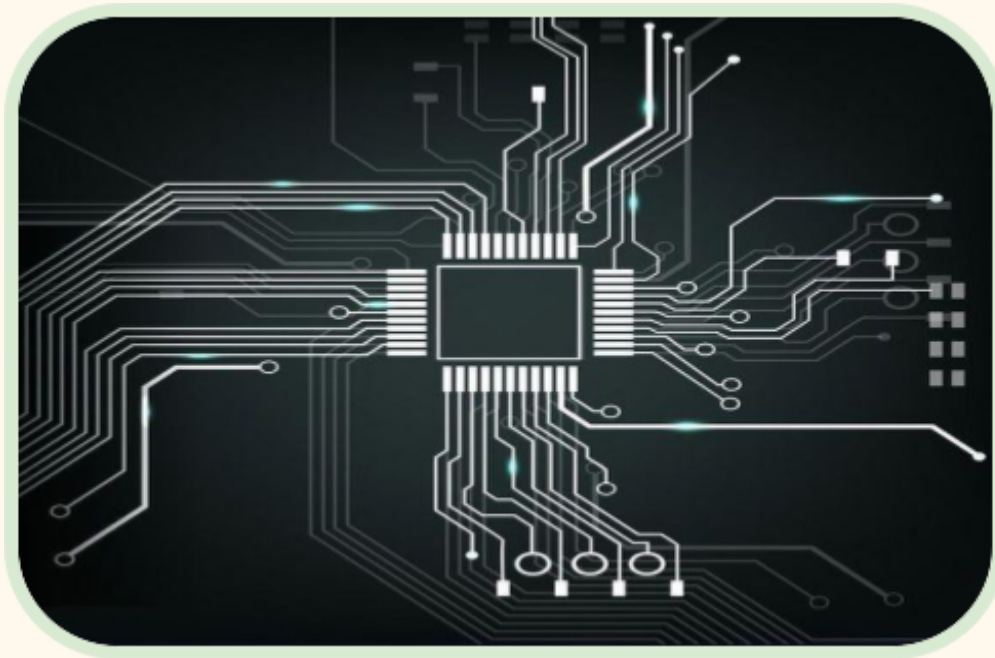


White Paper

Robo Waiter : Redefining Hospitality with Robots

By **NewAgeRobots**



ABSTRACT

NewAgeRobots redefines hospitality with a comprehensive suite of robots – static humanoids for greeting, expressive waiters for enhanced service, infotainment robots for engaging tours, and ChatGPT-powered chatbots integrated in self-information kiosks. Our robots navigate flawlessly using autonomous and preplanned navigation alongside environment mapping. Furthermore, targeted small payload delivery systems ensure efficient service. These solutions address modern hospitality challenges – labor shortages, guest engagement demands, and efficiency needs – by reducing costs, enriching guest experiences through 24/7 availability, and

optimizing operations with automation. NewAgeRobots offers a future-proof solution, empowering staff, transforming guest experiences, and revolutionizing the hospitality industry.

INTRODUCTION

The modern hospitality industry thrives on creating unforgettable experiences for guests. However, achieving this goal becomes increasingly difficult amidst a landscape of rising labor costs, guest demands for personalized experiences, and the constant pressure for operational efficiency. NewAgeRobots steps in to bridge this gap, offering a groundbreaking suite of hospitality robots designed to revolutionize guest interaction and streamline operations.

Imagine a welcoming humanoid robot greeting guests upon arrival, followed by an expressive waiter assisting with luggage and facilitating room service. Envision guests seamlessly accessing information through ChatGPT-powered kiosks, eliminating wait times and language barriers. Picture captivating tour guides, not of flesh and bone, but intelligent robots equipped with autonomous navigation and engaging infotainment, leading guests on personalized journeys through the venue.

NewAgeRobots transforms these visions into reality. Our innovative solutions address the most pressing concerns of the hospitality industry, paving the way for a future where staff is empowered to focus on personalized interactions, guests receive exceptional service 24/7, and operations are optimized for seamless efficiency. This introduction merely scratches the surface of what NewAgeRobots can offer. Join us as we delve deeper into the world of hospitality robotics and explore how our solutions can revolutionize your business.

Problem Statements and Offered Solutions

Guest Experience and Personalization

In today's competitive hospitality landscape, exceeding guest expectations and fostering personalized experiences are paramount. Traditional staffing models often struggle to meet these demands. Limited staff availability can lead to frustration for guests who require assistance outside of regular operating hours or struggle to find someone who speaks their language. Additionally, guests may face wait times or limited options when seeking information or requesting minor services.



NewAgeRobots tackles these challenges head-on with innovative solutions designed to enhance the guest experience. Autonomous navigation robots act as 24/7 companions, providing tours, answering questions, and offering personalized recommendations in a multitude of languages. These tireless robots eliminate language barriers and ensure guests always have access to assistance, fostering a more satisfying and inclusive experience.

Furthermore, ChatGPT-powered information kiosks empower guests with instant access to information. These kiosks can answer frequently asked questions, handle simple requests, and provide crucial details about hotel amenities or local attractions. By eliminating wait times and language barriers, information kiosks streamline guest experiences and empower them to explore the property and its surroundings independently.

Operational Efficiency and Streamlining:

Labor costs and repetitive tasks pose significant challenges for hospitality businesses. Staffing a large workforce can be expensive, and tasks like room service or deliveries can strain staff resources, limiting their availability for higher-value interactions with guests.

NewAgeRobots offers solutions that optimize operations and maximize staff productivity. Autonomous navigation robots handle room service, laundry delivery, or other small payload deliveries efficiently, freeing up valuable staff time for guest interactions. These robots ensure timely and accurate deliveries, minimizing the potential for errors and enhancing overall guest satisfaction. Additionally, expressive service robots can assist with luggage handling, room service delivery, or basic guest requests. By alleviating staff workload from repetitive tasks, these robots enhance overall operational efficiency and allow staff to focus on building meaningful connections with guests.

Food Service

Timeliness and accuracy are crucial aspects of a satisfying food delivery experience. Traditional delivery methods can be prone to delays or errors, leading to cold food or incorrect orders, and ultimately impacting guest satisfaction.

NewAgeRobots offers a solution that streamlines food delivery within the hospitality sector. Autonomous navigation robots deliver food orders efficiently and accurately, maintaining optimal temperature and freshness while minimizing wait times. These robots ensure guests receive their meals promptly and in perfect condition, enhancing their overall dining experience.



Autonomous Navigation and Indoor Mapping

Critical to the success of these solutions is NewAgeRobots' investment in autonomous navigation and indoor mapping technology. Our robots are equipped with advanced sensors and software that allow them to navigate complex indoor environments safely and efficiently. They can create and maintain detailed maps of their surroundings, enabling them to plan optimal routes, avoid obstacles, and ensure smooth, reliable operation. This technology underpins the seamless guest experience and streamlined operations that NewAgeRobots delivers. By ensuring our robots can navigate their environment with precision, we empower them to truly revolutionize the hospitality industry.

Methodology

Defining the Purpose

Our journey begins by clearly identifying the robot's use case. Will it serve as an informative information kiosk, a personalized and engaging chatbot, a captivating tour guide, or a convenient ordering station? Defining the purpose helps us design a robot with the necessary functionalities and features.

Payload Capacity

Once the use case is established, we determine the robot's maximum payload weight. This is crucial for tasks like food delivery or luggage assistance. Payload capacity influences factors like the robot's size, motor selection, and overall design

Interactive Elements

Next, we define the robot's Input/Output (I/O) interfaces. This includes features like expressive faces with LED displays for enhanced communication, speakers for audio interaction, touchscreens for user input, and even facial recognition capabilities for personalized experiences.



Electronic Powerhouse

The heart of the robot lies in its electronics. We meticulously select motors that provide the necessary power and maneuverability for the intended use case. Battery calculations ensure sufficient operation time, while LiDAR (Light Detection and Ranging) technology allows for precise obstacle detection and environment mapping. Additionally, Sonar sensors may be integrated for added safety and navigation in close quarters.

User-Controlled Movement Testing

With the hardware in place, we move on to user-controlled motion testing. This phase allows us to refine the robot's movement patterns, calibrate controls, and ensure intuitive user operation.

Mapping the Environment

Creating a digital map of the robot's operational environment is vital for autonomous navigation. We utilize advanced mapping software and the robot's LiDAR sensor data to build a detailed map of the space, including hallways, doorways, and key locations.

Autonomous Navigation and Path Planning

The final stage involves rigorous testing of the robot's autonomous navigation and path planning capabilities. Our software engineers develop algorithms that enable the robot to navigate the mapped environment safely and efficiently, avoiding obstacles and planning optimal routes. Extensive testing ensures the robot can navigate independently, delivering a seamless and reliable experience.

Examples

Jetson Nano based QuadRotor (Intel T265 based)



RaspberryPi based QuadRotor (Intel T265 based)



HmmngbRD-290 (OAK-D based HexaRotor)



Implementation Guide

NewAgeRobots's comprehensive services extend beyond design and testing. This guide provides a roadmap for implementing your custom drone, empowering you to navigate the key steps involved.

Determination of use case

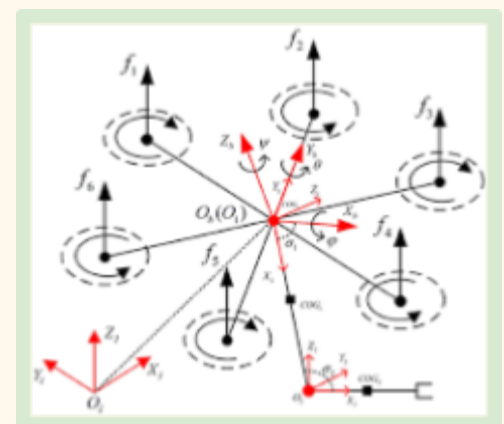
The very first step involves a clear understanding of your drone's purpose. What specific task will it be entrusted with? Is it envisioned for high-resolution aerial photography, capturing stunning landscapes or intricate architectural details? Perhaps your project demands a drone adept at search and rescue operations, navigating challenging terrains to locate missing individuals.



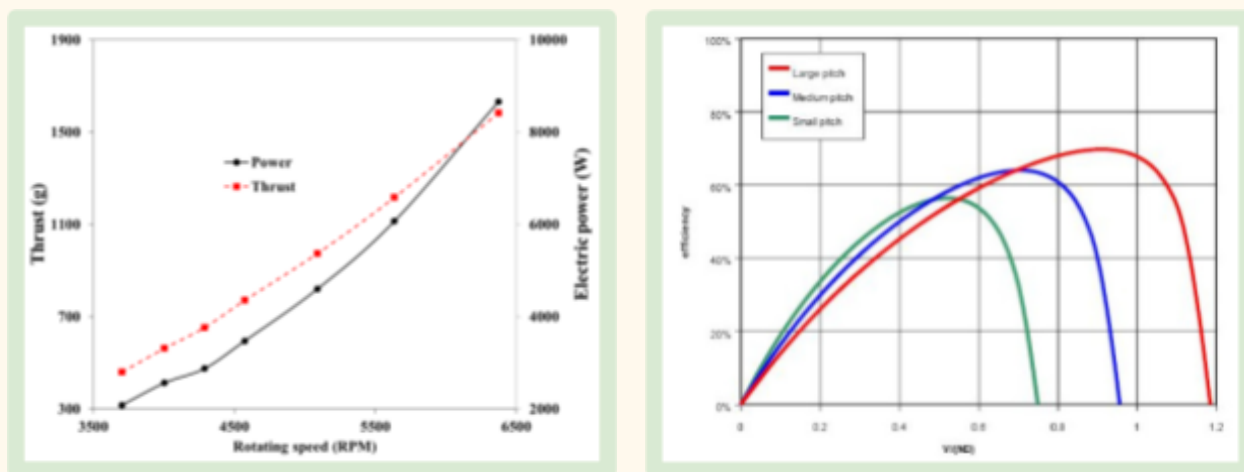
Maybe your focus lies in infrastructure inspection, requiring a drone capable of meticulously examining bridges, pipelines, or wind turbines for potential damage. Identifying the primary use case is crucial, as it will dictate the ideal configuration and capabilities your drone needs to possess. NewAgeRobots's team of experts will work closely with you to understand your specific needs and translate them into a customized drone solution.

Determination of Size

The size of your drone will be directly influenced by the use case and the payload requirements. Imagine the scenario: a nimble, lightweight drone might be perfectly suited for navigating tight indoor spaces, conducting inspections within buildings or confined environments.



Thrust Calculation



Thrust is the unsung hero, the invisible force that allows your drone to defy gravity and take flight. It's the critical factor determining a drone's ability to lift off and maneuver effectively. NewAgeRobots's meticulous calculations ensure your chosen motors and propellers generate sufficient thrust for your desired payload weight. We delve into the intricate details of motor specifications, propeller pitch, and overall airframe design to achieve the perfect balance. Imagine an underpowered drone struggling to maintain altitude with a heavy payload; through our precise calculations, we prevent such scenarios and ensure your drone has the muscle it needs to soar through the skies.

Flight Controller Selection

The flight controller acts as the brain of your drone, playing a central role in its operation. It's responsible for stabilizing flight, processing data from various sensors like accelerometers and gyroscopes, and controlling the output of the motors. The complexity of your drone and the desired feature set will determine the ideal flight controller. NewAgeRobots offers a comprehensive range of flight controller options, from basic models suitable for simple drones to advanced options capable of handling complex functionalities like autonomous navigation and waypoint missions. Our team will provide expert guidance in selecting the perfect flight controller to ensure your drone operates with precision and control.

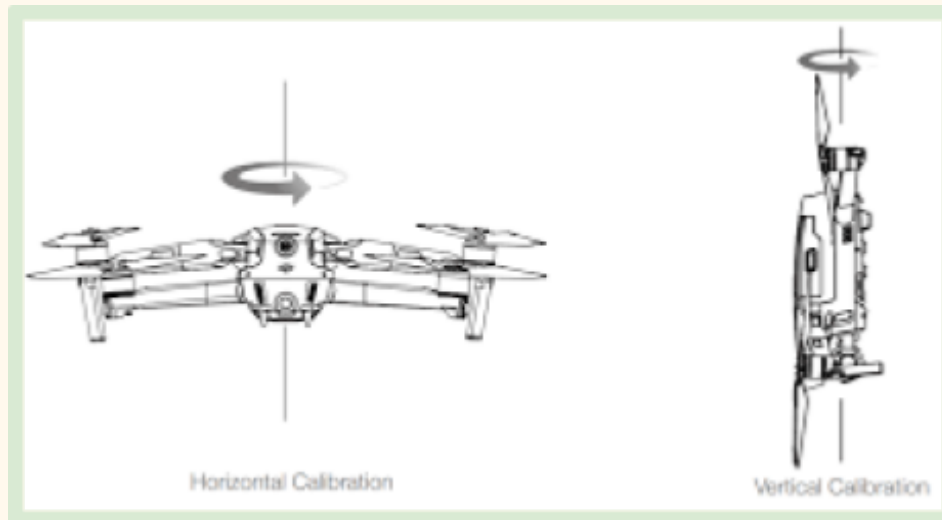
Feature	Pixhawk	Cube	Matek	Holybro (Flywoo)
Price	Moderate	High	Moderate	Low-Moderate
Size & Weight	Larger & Heavier	Larger & Heavier	Moderate	Smaller & Lighter
Processing Power	High	Very High	High	Moderate
Feature Set	Extensive	Most extensive	Extensive	Moderate
Community & Support	Large & Active	Active	Active	Large & Active
Software Compatibility	Widely Compatible	Widely Compatible	Widely Compatible	Ardupilot Preferred
Typical Use Cases	Professional, Research, Long-Range	High-Performance, VTOL	Professional, Research, Agriculture	Hobbyist, Freestyle

Assembly

With all the components meticulously chosen, it's time to witness the magic unfold: the assembly of your custom drone! NewAgeRobots can handle the entire assembly process, ensuring proper component integration and adherence to the highest safety protocols. Our team of skilled technicians possesses the expertise to meticulously assemble your drone, following best practices and utilizing specialized tools. This meticulous approach guarantees a robust and reliable drone, ready to tackle the demands of your project. However, if you possess the technical know-how and a thirst for hands-on experience, NewAgeRobots can provide detailed assembly instructions and guidance throughout the process.

Calibration

Calibration is an essential step, akin to fine-tuning a musical instrument. It ensures all the sensors and flight control systems work in perfect harmony. Imagine a drone experiencing erratic flight patterns due to improperly calibrated sensors. NewAgeRobots performs meticulous calibrations for optimal performance and flight stability.



Our team utilizes specialized equipment and software to calibrate the accelerometers, gyroscopes, magnetometers, and other sensors, ensuring they provide accurate data to the flight controller. Through this crucial step, we guarantee your drone flies smoothly and predictably, responding precisely to your control inputs.

Companion Computer and OS selection

For advanced functionalities like autonomous navigation or complex data logging, a companion computer might be required. This additional hardware acts as the brawn behind the flight controller's brain. Imagine a scenario where your drone needs to autonomously navigate a pre-programmed route to capture aerial imagery of a vast agricultural field. NewAgeRobots will assist you in selecting the appropriate companion computer hardware based on processing power and memory requirements. We will also guide you in choosing the most suitable operating system for your specific needs, considering factors like user-friendliness, compatibility with flight controller software, and real-time data processing capabilities.

Parameter Configuration

The flight controller software requires configuration with various parameters that act as the drone's flight DNA. These parameters include motor outputs, control settings, safety features, and autonomous navigation parameters (if applicable). Imagine a drone exhibiting sluggish

flight behavior due to improperly configured motor outputs. NewAgeRobots's expertise ensures these parameters are optimized for your drone's unique configuration. We will meticulously configure the software, tailoring it to your specific use case and ensuring the drone operates with optimal efficiency and safety.

Test Flight

The moment of truth has arrived! After meticulous assembly, calibration, and configuration, it's time to witness your creation take flight. NewAgeRobots conducts a series of controlled test flights in a designated safe environment. These test flights serve a critical purpose: to evaluate the drone's performance, stability, and overall functionality. Our team will meticulously analyze flight data, assessing factors like motor performance, battery consumption, flight time, and control responsiveness. Imagine a scenario where a test flight reveals an imbalance causing the drone to drift erratically. Through these controlled test flights, we identify and address any potential issues before the drone ventures into real-world scenarios.

NewAgeRobots prioritizes safety and ensures your drone is thoroughly tested and performing flawlessly before deployment.

Conclusion

The modern world craves innovation, and drone technology has emerged as a powerful tool across a vast spectrum of industries. However, harnessing the full potential of drones requires a more nuanced approach than simply acquiring a pre-built model. NewAgeRobots bridges this gap by offering a comprehensive suite of services, transforming your vision into a reality.

Our team of experts collaborates with you at every stage of the drone-making journey, from design and assembly to testing and deployment. We don't just sell drones; we craft customized solutions meticulously tailored to your specific needs and challenges. NewAgeRobots empowers you to leverage the transformative potential of drones, unlocking possibilities in search and rescue, infrastructure inspection, environmental monitoring, and countless other fields.

Partner with NewAgeRobots today and let's take flight together!

