

QUETZALCOATL



VRITRA

SMART VTOL FOR SURVEY, MAPPING & RAPID RESPONSE



INTRODUCTION

The Vritra VTOL is Quetzalcoatl's advanced aerial platform designed for autonomous mapping, surveillance, and emergency response. Powered by a Raspberry Pi onboard computer with a 26 TOPS AI accelerator, Vritra runs real-time AI models trained using our proprietary hybrid quantum model training platform to detect, classify, and geotag targets with precision. Equipped with a 64MP ArduCam, it can operate at 400 ft AGL, identifying people or assets of interest and seamlessly coordinating with responder drones for rapid action. With its VTOL capability, endurance-driven design, and multi-sensor compatibility, Vritra is purpose-built for search & rescue, large-scale surveying, industrial inspection, security patrols, and environmental monitoring.

KEY FEATURES - VRITRA VTOL

- Strong Airframe – High-durability ABS construction for rugged field operations
- Long Endurance – 20,000mAh battery enabling 2–3 hours forward flight
- Autonomous Intelligence – Raspberry Pi 5 with 26 TOPS AI hat for onboard obstacle detection, mapping, and autonomy
- Survey-Grade Payloads – Supports LiDAR, RGB, Thermal sensors
- High-Resolution Imaging – 64MP ArduCam, Hawkeye module, and DJI O4 FPV camera for real-time situational awareness
- Advanced Avionics – SpeedyBee F405 Wing and BLHeli_S 60A ESCs for reliable performance
- Navigation & Accuracy – Foxeer M10Q GPS with RTK precision and MAVLink telemetry protocol
- Control & Data Link – Radiomaster Pocket with ELRS 2.4GHz for low-latency command and telemetry
- All-Up Weight – 3 kg class VTOL designed for operational efficiency and portability

TECHNICAL DIMENSIONS & SPECIFICATIONS

Parameter	Value
Wingspan	1,340 mm
Length	990 mm
All-Up Weight (AUW)	3.0 kg
Maximum Take-off Weight (MTOW)	3.5 kg
Battery	20,000 mAh
Flight Time (Forward Flight)	2 – 3 hours
Maximum Altitude	400 ft AGL
Maximum Speed	27 – 30 m/s (95–110 km/h)
Wind Resistance	Up to 35–40 km/h
Primary Sensors	LiDAR, RGB, Thermal, 64MP ArduCam
Autonomy / Navigation	RTK GPS, obstacle detection, MAVLink telemetry
Onboard AI Acceleration	Raspberry Pi 5 + 26 TOPS AI hat
Body Material	High-strength ABS



PAYLOAD OPTIONS

The VRITRA VTOL is designed as a multi-mission platform with a modular payload system. Its dedicated nose allows for the seamless integration of a wide range of sensors, ensuring maximum flexibility for any application.

Modular Plug-and-Play Design: Quickly swap between a variety of payloads—LiDAR, RGB, and Thermal sensors—with a secure, tool-free mounting system. This enables rapid mission changes and reduces on-site setup time.



Optimal Sensor Performance: The payload bay features a passive cooling system that efficiently dissipates heat, maintaining optimal operating temperatures for high-performance sensors, even during extended missions.

Precision Gimbal: Available gimbal options provide 3-axis stabilization, ensuring your sensor data is always smooth, stable, and free from vibrations, which is critical for high-accuracy mapping and inspection.

AI-Driven Data Intelligence: Leveraging our in-house expertise, Quetzalcoatl provides dedicated AI models for your specific applications. These models are trained using our proprietary hybrid quantum model training platform and are powered by the onboard computer's 26 TOPS AI hat, delivering high-accuracy, real-time insights with unparalleled speed.

Hot-Swappable Battery System: Minimize downtime between missions with our hot-swappable battery system. Conduct back-to-back flights with minimal interruption, maximizing your operational time in the field.

SOFTWARE & DATA ECOSYSTEM

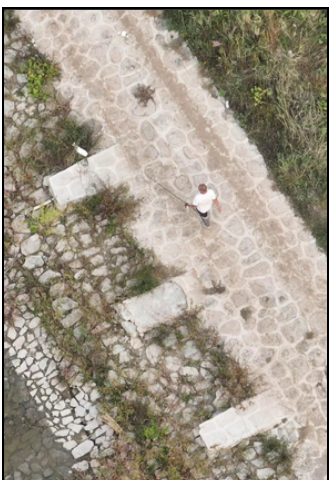
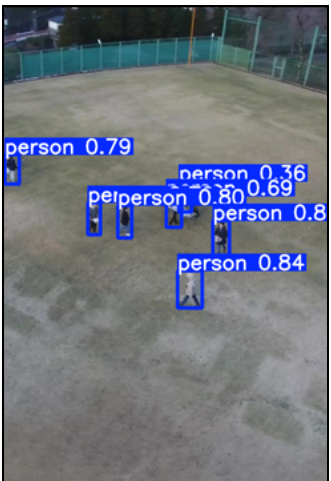
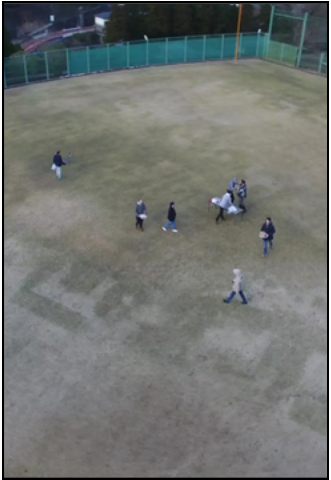
VRITRA is powered by a Raspberry Pi 5 with a 26 TOPS AI accelerator, enabling onboard real-time processing for target detection, classification, and geotagging. By transmitting only critical insights instead of raw data, it minimizes bandwidth use while maximizing efficiency. Fully compatible with open-source platforms like QGroundControl and MAVLink, VRITRA supports KML mapping, obstacle detection, and seamless multi-drone coordination for intelligent, autonomous missions.

Open-Source Ground Control: Compatible with industry-standard open-source ground station software like QGroundControl and Mission Planner. This provides a familiar, customizable, and reliable interface for mission planning, live monitoring, and flight control.

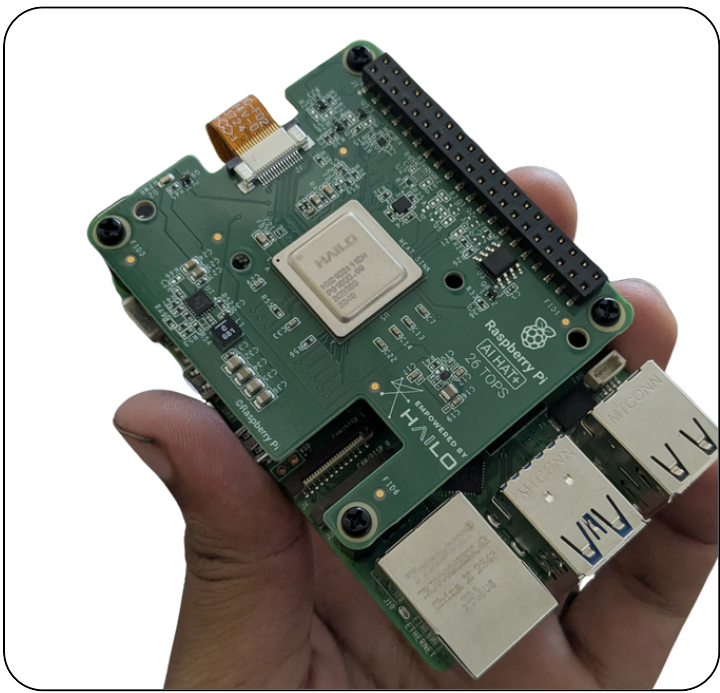
Real-Time Onboard AI Processing: Our onboard computing stack, powered by a Raspberry Pi 5 with a 26 TOPS AI hat, is the brain of the aircraft. It processes high-resolution sensor data in real-time, right on the drone, eliminating the need to transfer large files for analysis. This enables immediate insights and rapid decision-making in the field.

Hybrid Quantum AI Models: The system runs custom computer vision models developed and optimized using our proprietary hybrid quantum model training platform. This unique approach allows us to train highly accurate and incredibly fast AI models, specifically for edge deployment. The result is unparalleled precision in tasks such as real-time obstacle detection, object recognition, and classification.

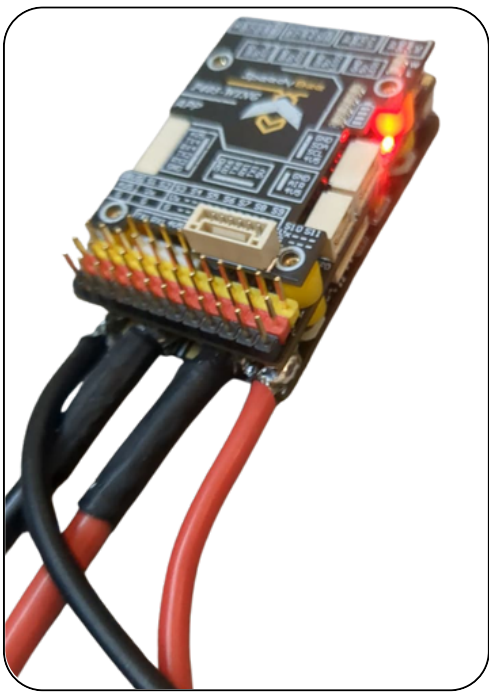
Intelligent & Actionable Data: By processing data onboard, the VRITRA can geotag points of interest, classify targets, and transmit only the critical, actionable data (such as coordinates of a person or a defect) back to the ground station. This significantly reduces data transmission load and allows for seamless integration with responder drones or ground teams.



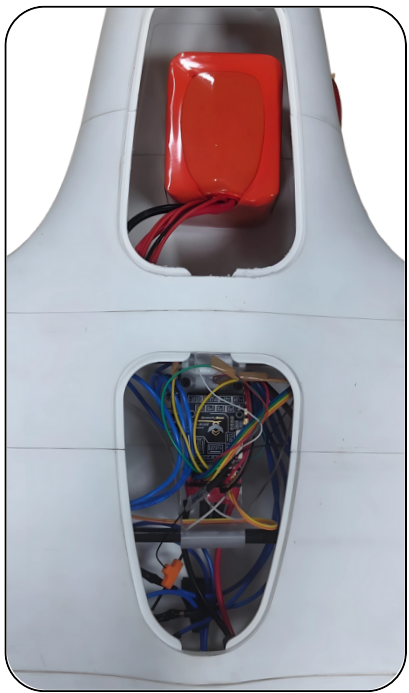
AI model accuracy used in VRITRA



Rpi+AI 26 TOPS HAT stack used in VRITRA



FC stack used in VRITRA



VRITRA EC bay

SAFETY & REDUNDANCY

The VRITRA VTOL is engineered with a comprehensive suite of safety and redundancy features to ensure reliable, risk-free operations in any environment. Our return-to-home feature autonomously guides the aircraft back to its launch point in the event of a low battery or lost signal.

The advanced obstacle avoidance system uses real-time sensors and onboard AI to detect and dynamically reroute around obstructions, while path planning ensures safe and efficient navigation through complex terrains.

For complete mission integrity, the system includes multiple fail-safe protocols and an onboard black box that logs critical flight data for post-flight analysis. Additionally, geofencing capabilities enforce a virtual boundary, preventing the drone from flying into restricted areas. Finally, all GPS and telemetry data are protected with data encryption, securing your flight information from unauthorized access.



VRITRA



VRITRA VTOL - INVESTMENT & CONFIGURATION

Invest in a system that scales with your needs. The VRITRA VTOL offers a modular approach, allowing you to build the ideal platform for your specific applications.

Component	Description	Estimated Cost (₹)
VRITRA VTOL Core System	Airframe, flight controller (SpeedyBee F405), ESCs (BLHeli_S 60A), and onboard computer (Raspberry Pi 5 + 26 TOPS AI Hat).	₹3,00,000
Battery & Charging	20,000 mAh Hot-Swappable Battery (x2) & Charger.	₹80,000
Control & Telemetry	Radiomaster Pocket with ELRS 2.4GHz and MAVLink Telemetry.	₹25,000

Payload & Software Add-ons

Add-on	Description	Cost (₹)
RGB Camera Module	For high-resolution mapping and reconnaissance.	₹10,000
Thermal Sensor	Thermal sensor for search & rescue, inspections, and security.	₹40,000
LiDAR Payload	High-density LiDAR for precise 3D point cloud generation and topographical mapping.	₹20,000
Quetzalcoatl AI Models	Customized AI models optimized with our proprietary Hybrid Quantum Training Platform.	Custom Quote

VRITRA VTOL – ENTERPRISE SOLUTIONS

The VRITRA VTOL is more than a drone; it's a fully integrated solution tailored to your operational requirements. Our team works directly with clients to design a custom package that includes the ideal combination of hardware, payloads, and bespoke AI models.

For a detailed quote and to explore how the VRITRA VTOL can transform your operations, please contact our solutions team today.

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