**Autonomous Quad Copter Control for Person Tracking**

**Additions to Enhance the Autonomous Drone Syste:**

* **360° Obstacle Avoidance**
* **GPS-Based Return to Home (Failsafe)**
* **Multi-Target Detection + Prioritization**
* **Payload Delivery System**
* **Cloud Sync + Remote Monitoring (Optional)**
* **Real-Time Video Streaming**
* **Gesture-Based Commands (via Vision)**
* **Voice Command Support**
* **Autonomous Mapping + Exploration Mode**
* **ncrypted Telemetry + Access Control**
* **Long-Range Communication Modules**
* **RTK GPS Module (High-Precision GPS)**
* **Smart Power Management**
* **Companion Computer Upgrades**
* **Gimbal System**
* **Environmental Sensors**
* **Navigation and Flight Safety**
* **Security + Redundancy Systems**
* **Thermal/Infrared Camera**

**Futuristic Features for Autonomous Unmanned Drones**

* **Swarm Intelligence**
* **Live 3D Environment Reconstruction**
* **Onboard Continual Learning AI**
* **Energy Harvesting (Solar, RF, or Kinetic)**
* **Human-Robot Interaction (HRI)**
* **Autonomous Ethical Decision-Making**
* **Predictive Flight + Preemptive Obstacle Avoidance**
* **. Interplanetary/Extreme Terrain Exploration Readiness**
* **Retractable Drone Arms for Object Interaction**

**A white paper with black text

AI-generated content may be incorrect.**

**A screenshot of a computer

AI-generated content may be incorrect.**

**[Idle] → [Takeoff] → [Search Person] → [Track Person] → [Land] ↘ [Failsafe] ← [Lost Target] ← [Battery Critical]**

**----------------------------------------------------------------------------------------------**

**[Camera Capture] ↓**

**[Preprocess (resize + normalize)] ↓**

**[Run Model (YOLO/ONNX/TensorRT)] ↓**

**[Get bounding box center] ↓**

**[Compute error (dx, dy)] ↓**

**[Feed to PID controller] ↓**

**[Send MAVLink RC\_OVERRIDE to Pixhawk]**