Offline AI Drone

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Introduction:

- Most drones depend on WiFi or cloud AI services, which limits where they can operate.
- Our drone performs all video capture and AI processing entirely offline, with no network required.
- This creates a versatile, reliable platform that can adapt to many applications and environments.

Motivation:

- Cloud-based drones can't operate reliably in low-connectivity or restricted environments.
- Offline AI ensures consistent performance, privacy, and security with no network required.
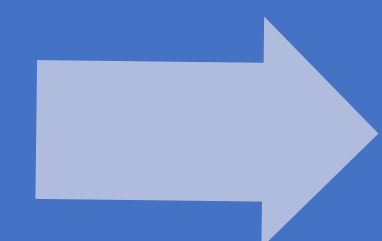- This approach gives teams full control to deploy custom models for their specific needs.
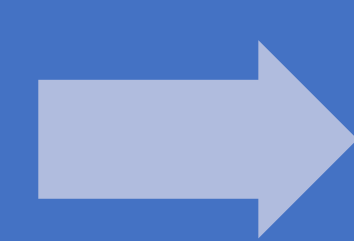
System Structure:

Drone
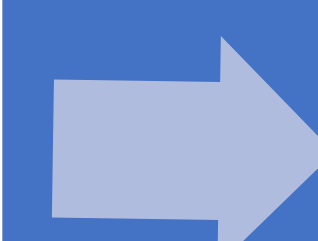- Captures video through built in camera
- Sends footage directly to phone

Phone
- Views live footage
- Controls video recording

Raspberry PI
- Runs Python Program
- Stores local AI models and applies processing

Monitor
- Shows processed video and AI results

Future Work & Use Cases:

Industrial:
Count people, vehicles, rooms, or assets.

Infrastructure:
Detect cracks, hotspots, and structural features.

Agriculture:
Crop counts, livestock tracking, field analysis.

Research:
Run custom offline models for experiments.