

Home Surveillance System

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01. Web stack

- Tech stack: **Next.js** and **Tailwind CSS**
- Implemented **FastAPI** as a web framework.
- Integrated live streaming over the internet with **ngrok** API.
- **Dynamic URL** to access the webstream of Raspberry pi cam from any browser.

02. Computer Vision

- Ultralytics **YOLO** nano model for real-time object detection and **OpenCV** for package identification through transformation functions.
- Optimized **Edge AI** – Runs efficient vision algorithms locally on Raspberry Pi for fast, autonomous detection.

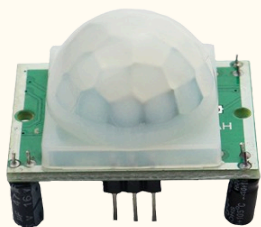


HOME SURVEILLANCE SYSTEM



RASPBERRY PI 3 CAMERA MODULE

03. Motion Sensing



PIR SENSOR HC-SR501

- RANGE SET TO 5 meters

PIR SENSOR	RASPBERRY PI
GND	GND (PIN 9)
DATA	GPIO 4 (PIN 7)
VCC	5V (PIN 2)

04. Email Client



- **SMTP-based alert system** sends an intruder email when human and motion are detected, and a package delivery email when package and motion are detected, with a five-minutes cooldown to prevent repeated alerts.