

Artificial Vision Wind Parks



Artificial Vision delivers automatic protection for birds and bats in a given range. The system avoids the collision of the bats and birds with the WTG using active or passive methods.

The system does not use complex moving parts such as radars, only high resolution cameras are used as sensors.

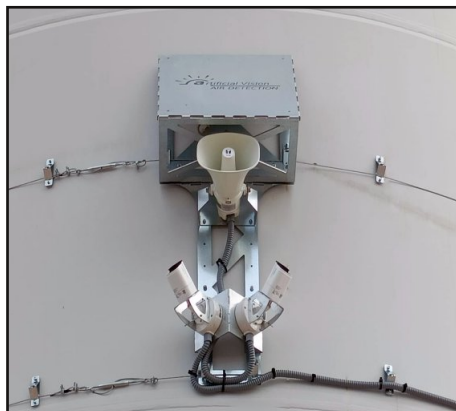
The system will record all events in real time in a clear and intuitive report system



It is possible to automatically detect and protect against both any type of birds and bats.

The setup and installation is really easy as well, given that there's no need to perform any kind of calibration process or such, the only step in the setup is to actually fix the system to the point where it will be installed.

The system works with artificial intelligence to provide automatic and real time bird detection. Images sequences can be recorded. It is possible to have an autonomous power supply system or it can be connected to the mains.



It is possible to connect this module to other Deterrence Module and Windturbine Brake Module.

The system is plug and play, and really easy to set up, given that no calibration is necessary.

Corrective & Predictive Actions

The system learns and re-trains daily, providing users with forecasted flight activity and weather for the next 7 days.

Preventive Actions: Predict bird activity up to 7 days in advance by correlating historical flight data with meteorology. This proactive approach allows us to adjust turbine speeds, schedule maintenance, coordinate ornithologist visits, or halt operations preemptively.

Corrective Actions: Response to birds presence near turbines by emitting high intensity sounds and commanding the WTG STOP



U-Detection System

Main Highlights

Stereoscopic Vision (4K)

Total of 8 cameras with 4K resolution & Stereoscopic Vision

Video Recording

High quality 5 Hz videos available for all detections

Species Recognition

Manual and Automatic species recognition

No False Positives

False Positives ratio below 1%

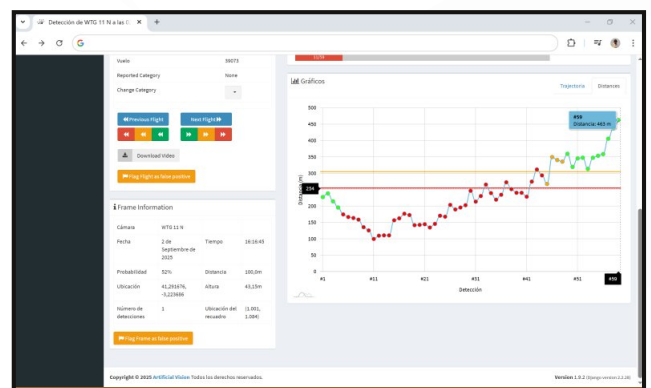
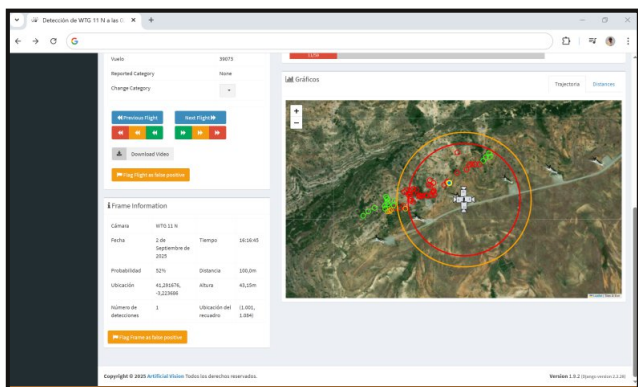
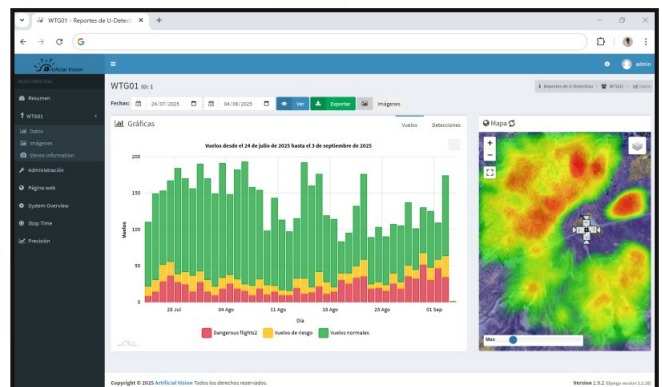
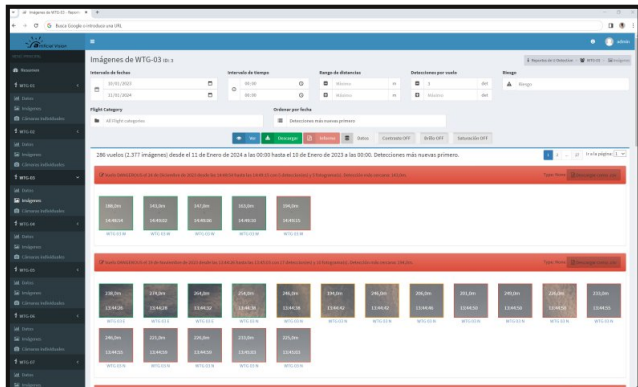
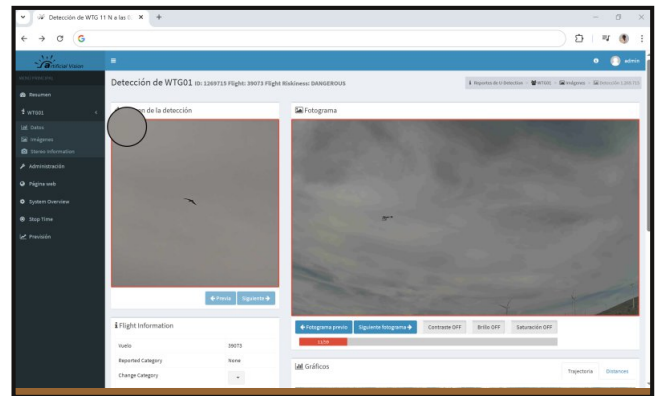
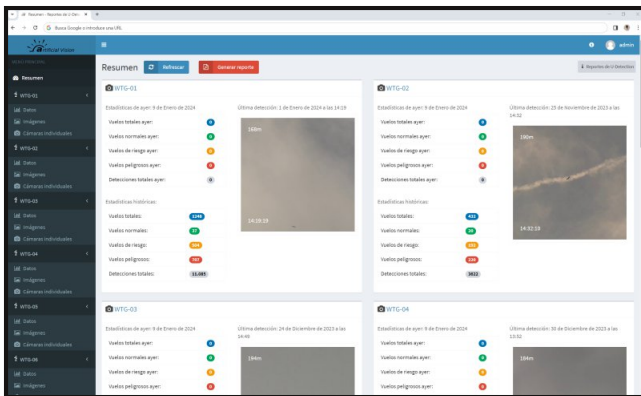
Stop & Deterrence

Unattended real time SCADA communications

Forecast

Flights forecast for the next 7 days

Software Screenshots



General Specifications

Detection distance..... 600 m
 Field of view..... 90°
 Average daily detections..... 3.000*
 Number of detections historical..... 15.000.000**
 Detection time historical..... 10 years**
 Connectivity..... 3G / WiFi / Ethernet / Satellite
 Minimum bandwidth..... 256 Kbps
 Working temperature range..... -20°C to 55°C
 Refrigeration..... Air Conditioner System
 Operating system..... Linux
 Calibration process..... Not needed (plug & play)

Camera

Resolution..... 4096x2160 px (4K)
 Sensor..... CMOS Exmor RS
 Aperture..... F 4
 Focal Distance..... f 7.9 mm
 Field of focus..... 20 cm - infinity
 HFOV..... 90°
 Refrigeration..... Peltier Module
 Dimensions (WxHxL)..... 130x240x450 mm

Electrical Specifications

Rack Vin 230 V AC
 Rack peak power consumption..... 1000 W
 - AC power consumption..... 600 W
 - AI Computer power consumption..... 400 W
 Camera Vin (rack supplied)..... 230 V AC
 Camera power consumption..... 50 W

* Depending on location

** Storage customized upon client requirements

Report Module

- Full reports of detections
- Graphics and Heatmaps
- Statistics of detections
- Multiple detection modules /locations
- Software installed in Artificial Vision server or client server

AI Computer

Processor speed..... 3,5 GHz
 Number of cores..... 12
 RAM..... 16 GB
 RAM Speed..... 3333 MHz
 Storage (factory default)..... 1 TB**
 Cameras managed by computer..... x2
 Rack Dimensions (WxHxL)..... 940x1210x700 mm

Graphics Card

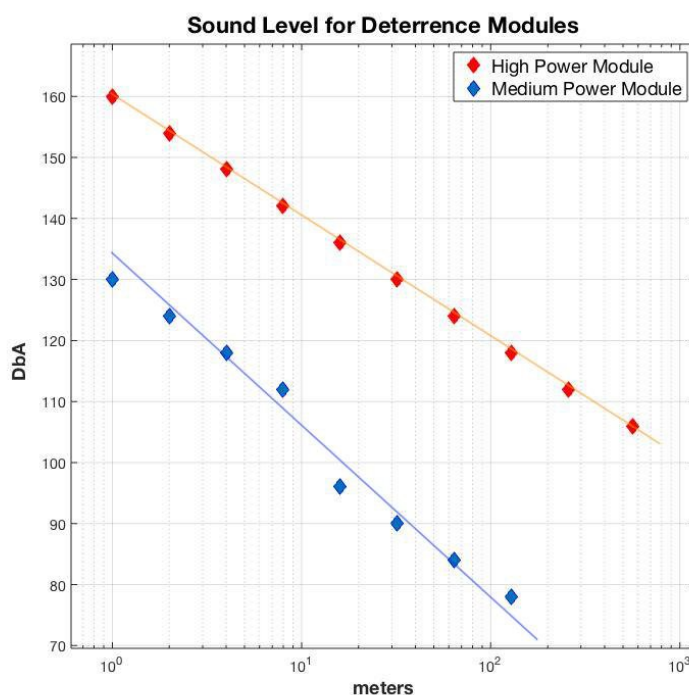
Speed..... 1650 MHz
 Dedicated Memory..... 11 GB
 Cuda Cores..... 4300

Deterrence Module

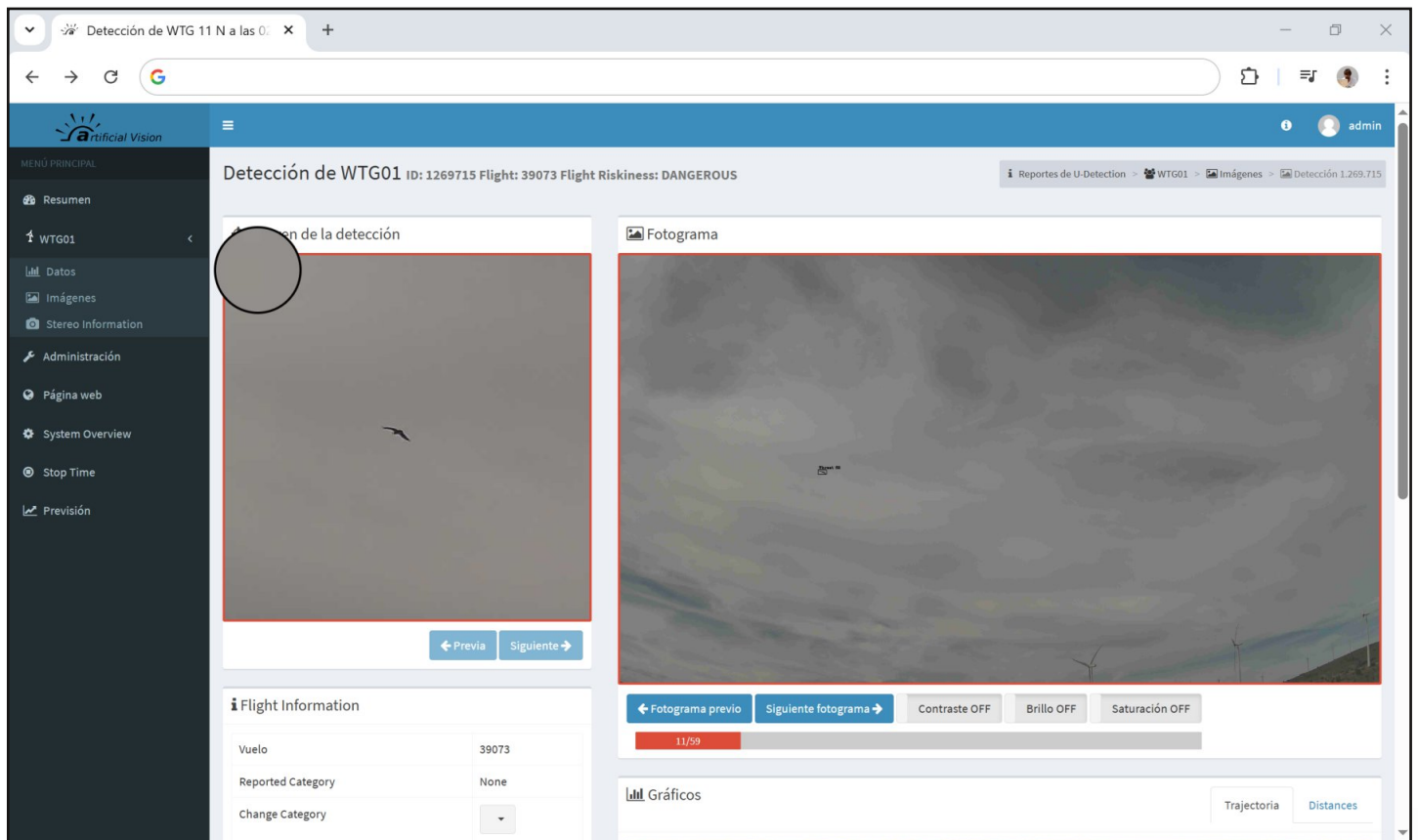
High power deterrence module
 Deterrence distance..... 500 m
 Weight..... 39.4 Kg
 Dimensions..... 910x102x330 mm
 Power consumption..... 760 W

Medium power deterrence module

Deterrence distance..... 100 m
 Weight..... 2.4 Kg
 Dimensions (WxHxL)..... 315x315x315 mm
 Power consumption..... 100 W



U-Detection System



U-Reports Example



4K Detection Examples