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.

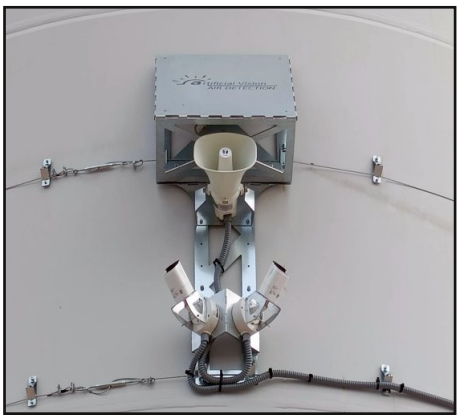
The system does not use complex moving parts such as radars, only high resolution cameras are used as sensors.

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

Iit 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 hight intensity sounds and commanding the WTG STOP

U-Detection System

Main Highlights

Stereoscopic Vision (4.5K)

Total of 8 cameras with 4.5K resolution & Stereoscopic Vision

Species Recognition

Manual and Automatic species recognition

No False Positives

False Positives ratio below 1%

Video Recording

High quality 5 Hz videos available for all detections

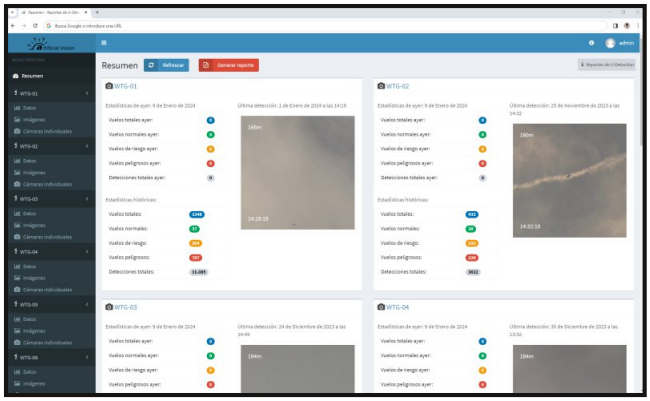
Stop & Deterrence

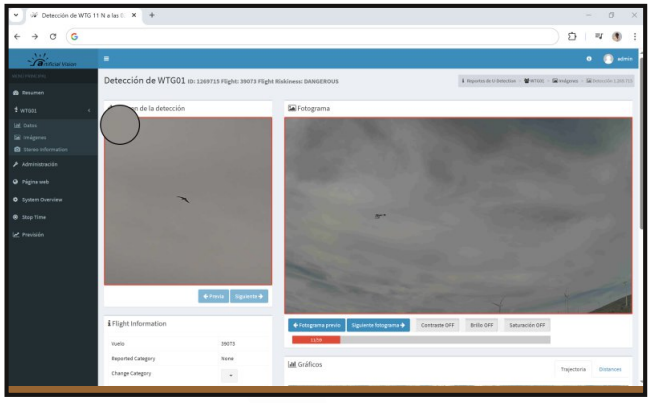
Unattended real time SCADA communications

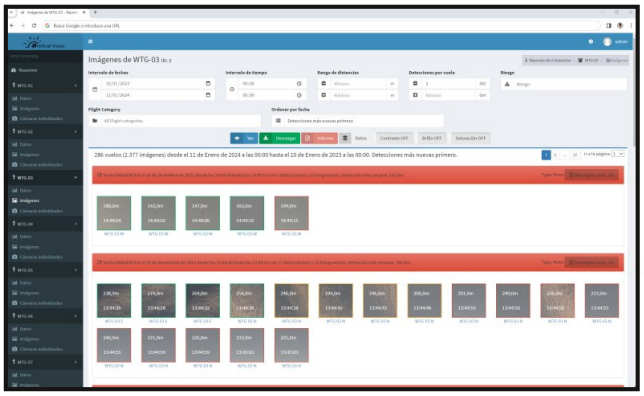
Forecast

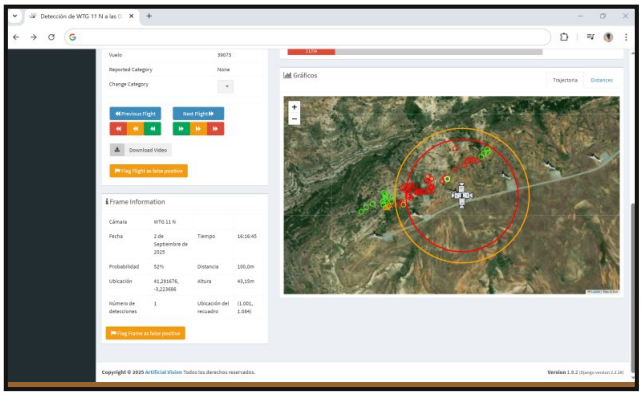
Flights forecast for the next 7 days

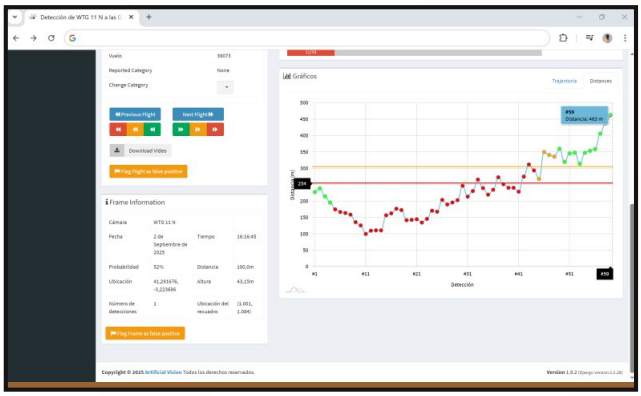
Software Screenshots











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.....4512x2512 px (4.5K)
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

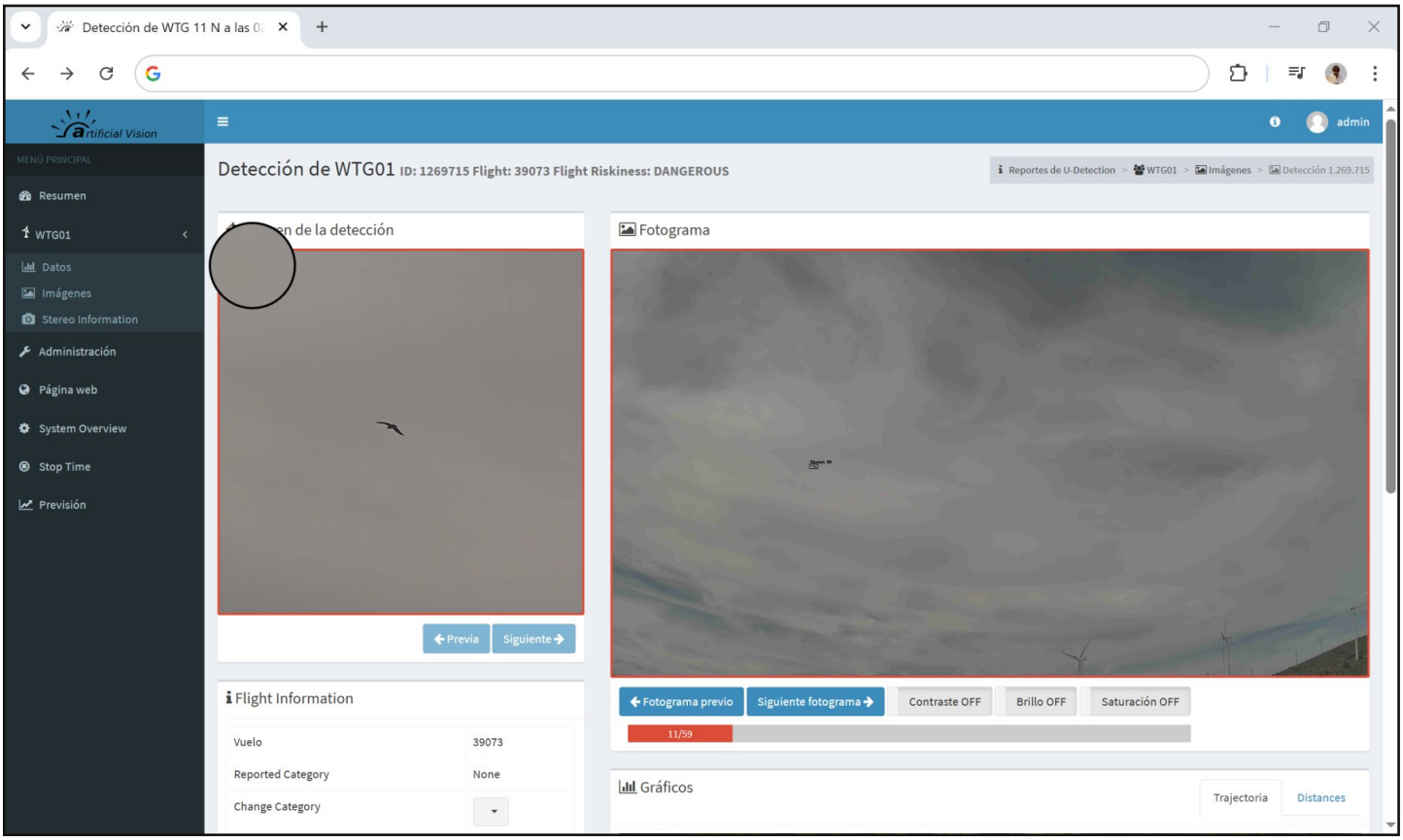
Deterrence Module

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