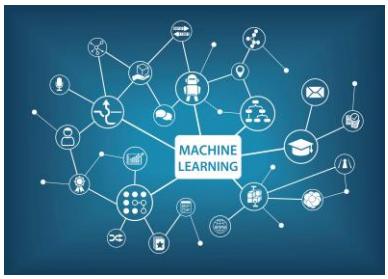
PROYECTO I+D+i



Title of the project

Intelligent satellite vision system for the prevention of forest fires in electricity distribution and transport infrastructures

Acronym

ISAPREF

Project content

Electric power transmission relies primarily on the use of electrical towers to transport power from production stations to consumers. These towers need to traverse vegetated areas to reach end users. In order to reduce costs, these towers carry high voltage electricity. The uncontrolled growth of vegetation around the towers poses a significant risk of fire and severe damage that entails enormous economic and environmental costs.

General objectives

COMSA will develop and validate a comprehensive artificial vision system for the automatic and remote detection of vegetation around energy distribution and transport infrastructures through the analysis of satellite images and the use of Machine Learning algorithms. The main tasks are the following:

- Development of the artificial vision system and validation of the semantic segmentation method of satellite images with convolutional neural networks
- Development of the software platform for acquisition and pre-processing of satellite images
- Validation of the method and system

Results and conclusions

A computer vision tool has been developed to monitor vegetation around power lines, consisting of a server that, after acquiring satellite images, processes them using a model developed for the project, identifying the vegetation in the images, and then uses QGIS to superimpose the original photo, a map of the area and the vegetation mask to visualise the current state of the line. With semantic segmentation, an image is separated into layers corresponding to different objects and visual elements. And finally, an AI is trained to obtain the results.

The main conclusions of the project are the following:

- The tool has an effective functionality in controlled environments
- The tool is feasible in extensive real environments
- The cost is very low

BUSINESS AREAS

Technical Area and R&D

DURATION
2021-2024

BUDGET
Consortium: 199.125,95€
COMSA: 109.514.50€

KEYWORDS
Electrical towers, artificial vision, satellite images, fire prevention, Machine Learning

RESPONSIBLE COMSA
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