Algorithms for object recognition and detection in images for industrial applications

OBJECTIVES

Solving problems of image recognition, object detection in images, and installation of algorithms in embedded systems characterized by limited space and low computational power.

ACTIVITY

The first step was the implementation of the image recognition network. The activity first involved the creation of the datasets and then proceeded with the training of the convolutional neural network. Having obtained the desired result, we proceeded to dimensionally reduce the network itself through the technologies developed in the research group.

The second step involved the implementation of an algorithm that localizes objects. For this objective, we used a specific architecture (SSD-300), thus creating a data set, subsequently realizing a network and training it with machine learning systems; similarly, we then proceeded to reduce it to allow its installation on board household appliances.

ORIG

RED
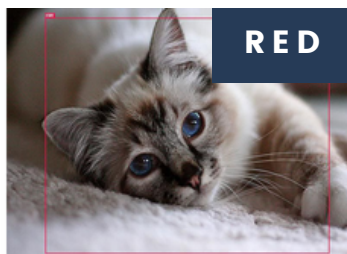
RESULTS

Thanks to our technologies, it was possible to reduce the required storage by up to **20x**, with a network traning time reduced by **60%** and a result accuracy of **95%**, identical to an unreduced neural network.

Goals

Realization of algorithms to be installed on board appliances (embedded processors) with limited space and power.

Benefits

- Algorithms requiring less computational power and storage space.
- High accuracy of the result.
- Reduced training time.

Our experience allows us to bring these technologies to limited environments, but still ensure accuracy and performance.

– Andrea Martini
Fast Computing