

# Computer Vision for used car parts recognition



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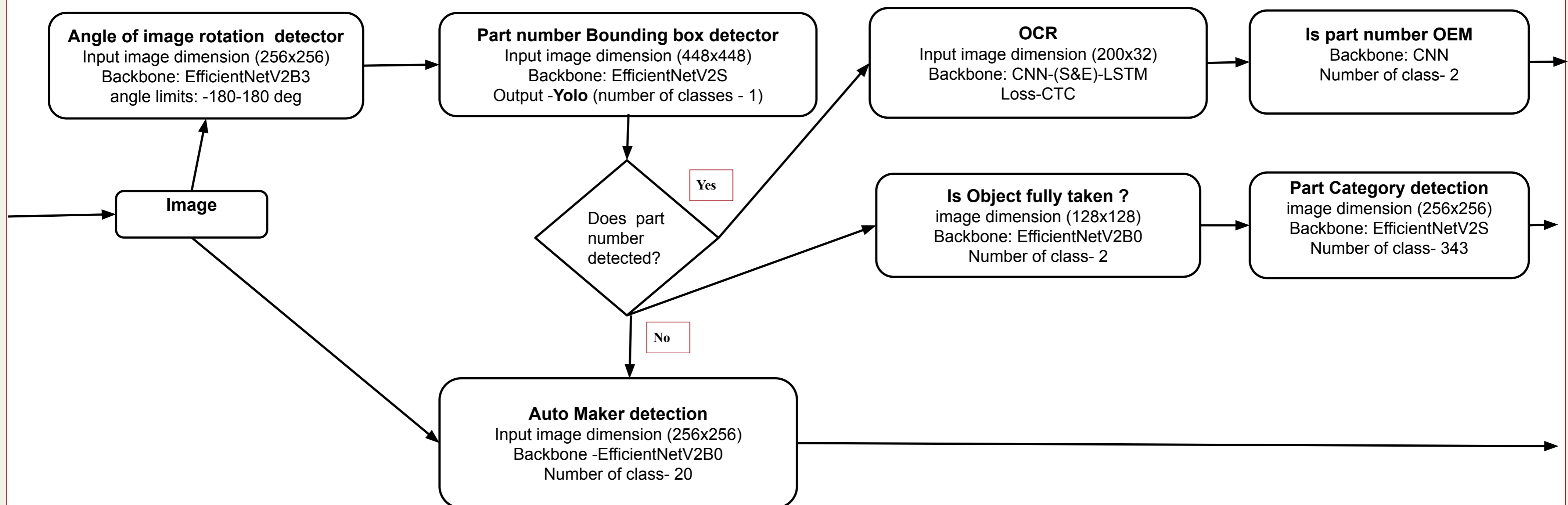
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## Introduction

Circular economy is now gaining popularity. It is important not only to reuse used car parts but also for ecology (a lot of used car scrapyards exist and some of them pollute the environment). Uploading as much and as fast as possible used car parts are important for selling and if it is not sellable for utilization. In the company Ovoko developed a Computer Vision(CV) system which detects all necessary part numbers, category, an automaker this information helps prefill all necessary fields for selling platform. CV systems are faced with challenges: used parts part numbers are printed in very different ways: different fonts, and surfaces (plastic, metallic, glass, etc.). Because it is not new parts - they are rusty, part numbers can be damaged. Photo quality is with various rotation angles and zooms. CV pipeline consists of 7 deep learning models. Information later goes to the LSH (not exact match) algorithm to search the existing database. All models deployed in the AWS cloud using sagemaker multi-container endpoints. The system simplified used car part upload procedure, now you do not have to be an automotive expert to do that.

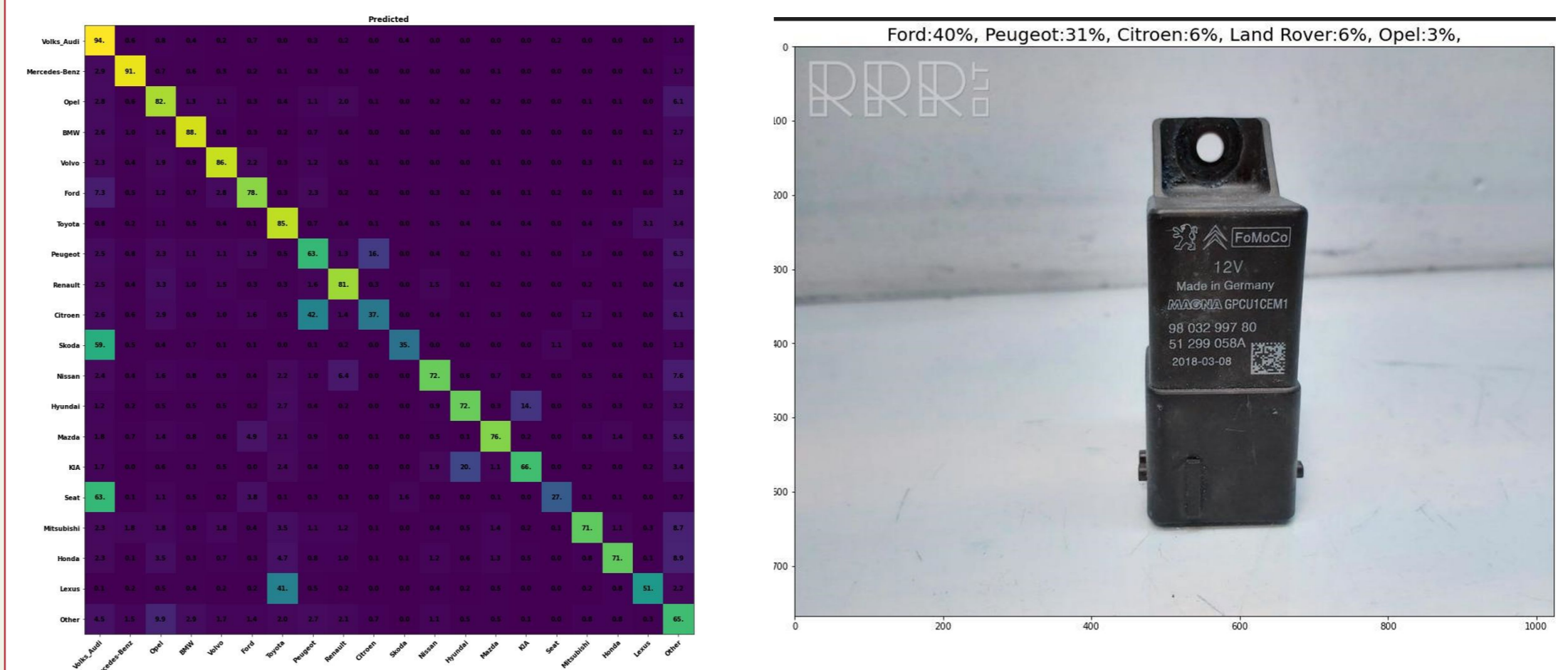
## CV pipeline



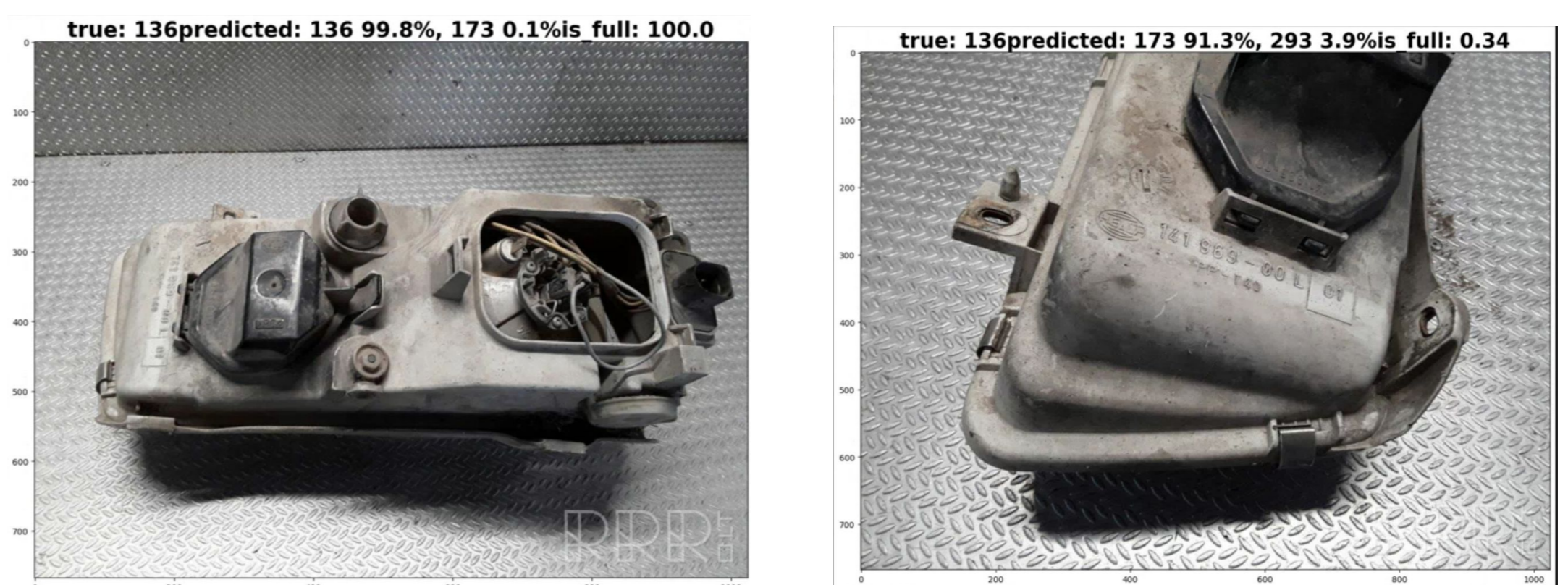
## Part's numbers detection results



## Auto maker detector results



## Is\_full and category detection models in action



## Interesting facts

- The CV models are deployed in AWS cloud with Sagemaker multi container endpoint (instance with one CPU).
- Average inference time for all 7 models with each pre- and post- processings - 3s.
- Using the CV system used car part can be filled to the marketplace within 30s.
- 83% users of the system do not do any correction to Computer Vision suggestions. Accuracy of OEM number recognition - 93 %.
- Models are trained with 3 GPUs (RTX 3090) and millions of images from the marketplace. Tensorflow.
- Models are training with new data ever and ever.