Enriching and rediscovering historic pictures with AI

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Team

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Repository
https://github.com/iharsuvorau/ml-2021-ajapaik
Problems

Object Detection

To improve web search, site navigation and image discovery

![Church image](image1)

Picture-In-Picture Detection

To leave only useful part of a picture for further automation

![Picture image](image2)
Approach

Object Detection

Using the existing very well developed tool YOLO and OpenCV’s DNN module

Machine readable output

Picture-In-Picture Detection

Retraining of the existing network using Detectron2, PyTorch, CUDA

Train and validation datasets with 100 and 20 images labeled with VGG Image Annotator

Machine readable output

Results

Object Detection
Source code with CLI wrapper in Python at ml-2021-ajapaik/object_detector

Picture-In-Picture Detection
Trained model on PIP detection
Source code with CLI wrapper in Python at ml-2021-ajapaik/pip_detector
Installed software at the partner’s server
Photographs from the validation set, [https://ajapaik.ee/](https://ajapaik.ee/)
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Lessons learned

Image segmentation is a well developed area of ML with multiple good NN frameworks and already pre-trained models ready to use

1 NVIDIA GPU without a queue is better for development than a cluster of GPUs with a queued access