

DW Poznań - #14 Projekt autonomicznego pojazdu, cz.3 dane/symulator

2020-09-03

Agenda

01. Dane i typy danych do uczenia

02. Datasets

- a. Mapillary Vistas Dataset (<https://www.mapillary.com/datasets>)
- b. Virtual KITTI (<https://github.com/navoshta/KITTI-Dataset>)
- c. Cityscapes Dataset (<https://www.cityscapes-dataset.com/>)
- d. DUS (The Daimler Urban Segmentation dataset) (<http://www.6d-vision.com/scene-labeling>)
- e. CamVid (<http://mi.eng.cam.ac.uk/research/projects/VideoRec/CamVid/>)

03. DeepLab model

04. Nasz pierwszy symulator

LiDAR laser scanner.

- Dane z urządzenia lasera przedstawiające obraz 3D i odległości
- PandaSet

<https://scale.com/resources/download/pandaset>

<https://desktop.arcgis.com/en/arcmap/10.3/manage-data/las-dataset/what-is-lidar-data-.htm>



Object Recognition

- Datasets z rozpoznawaniem obrazów
- Microsoft COCO Dataset
<https://cocodataset.org/#home>
- ImageNet
<http://image-net.org/>
- PASCAL VOC
<http://host.robots.ox.ac.uk/pascal/VOC/>

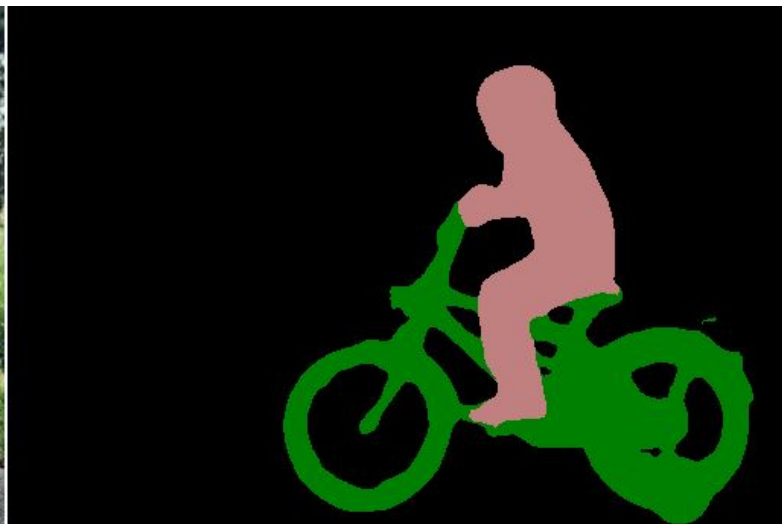


Deep Lab Demo

<https://github.com/tensorflow/models/tree/master/research/deeplab>

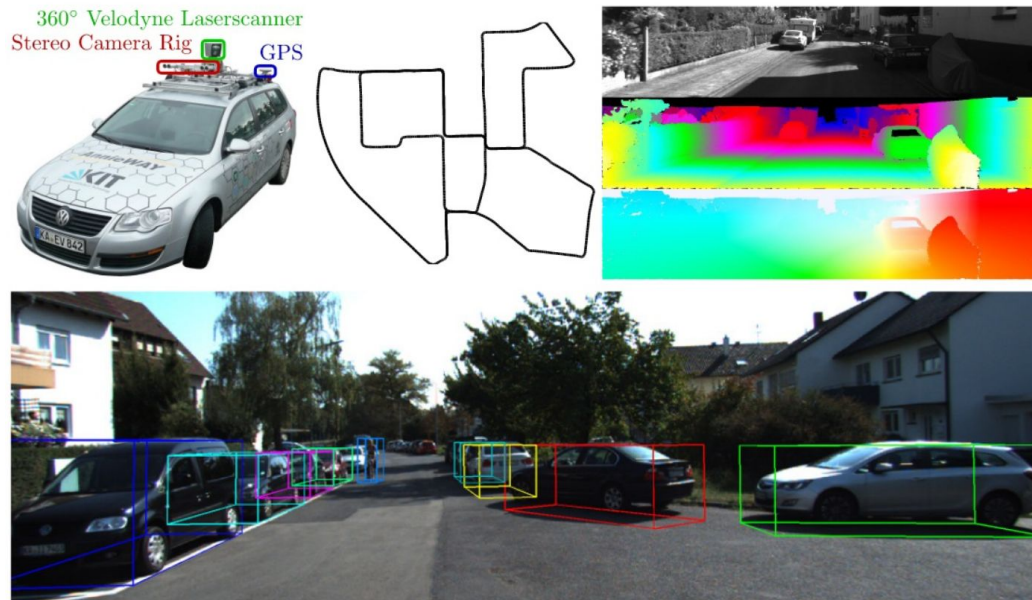
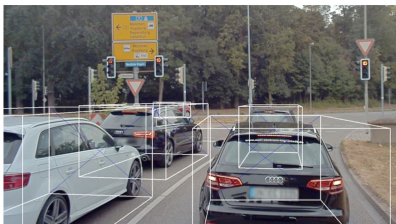
https://colab.research.google.com/github/tensorflow/models/blob/master/research/deeplab/deeplab_demo.ipynb#scrollTo=kAbdmRmvq0Je

- Posiada już wyuczone modele na zbiorach COCO, Pascal VOC



Autonomous Driving Datasets

- Dane już zebrane z samochodu autonomicznego
- KITTI dataset
http://www.cvlibs.net/datasets/kitti/raw_data.php
- AUDI dataset
<https://www.a2d2.audi/a2d2/en/dataset.html>
 - 3D bounding boxes



Mapillary Vistas Dataset

<https://www.mapillary.com/dataset/vistas?pKey=rwbBtYKofke2NeLlvj8j-A>

- Dataset specjalnie przygotowany pod autonomiczne pojazdy



Cityscapes Dataset

<https://www.cityscapes-dataset.com/dataset-overview/>

Diversity

- 50 cities
- Several months (spring, summer, fall)
- Daytime
- Good/medium weather conditions
- Manually selected frames
 - Large number of dynamic objects
 - Varying scene layout
 - Varying background

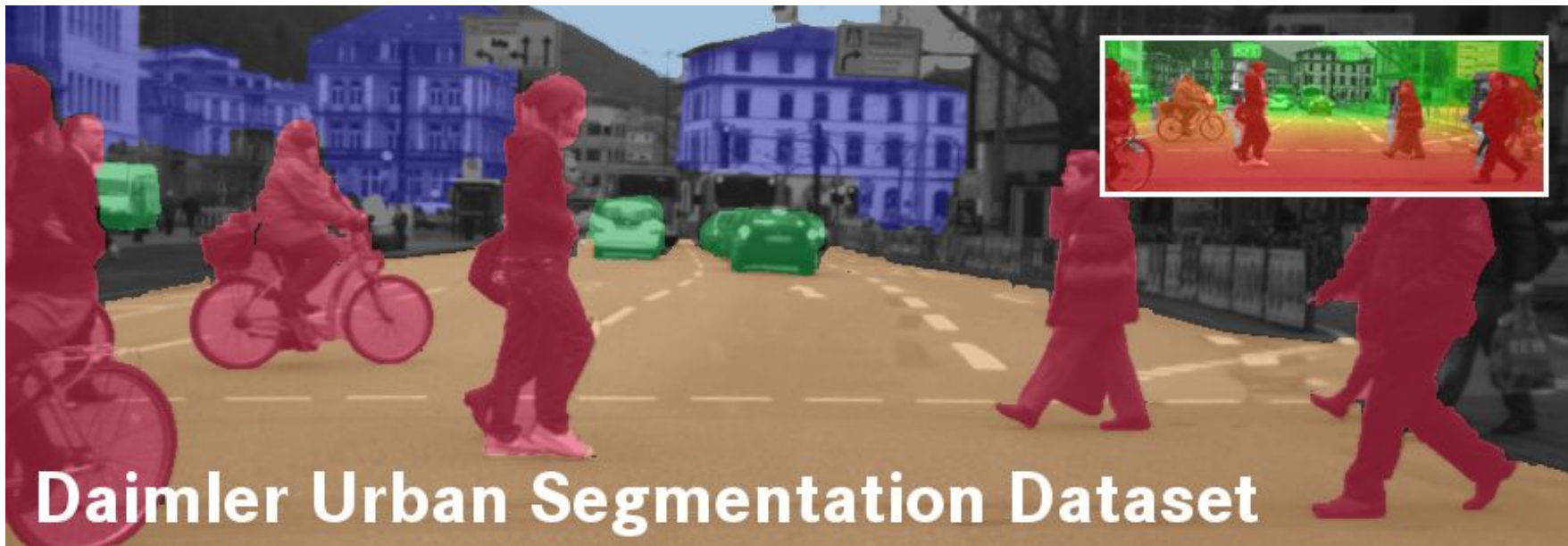
Volume

- 5 000 annotated images with fine annotations ([examples](#))
- 20 000 annotated images with coarse annotations ([examples](#))



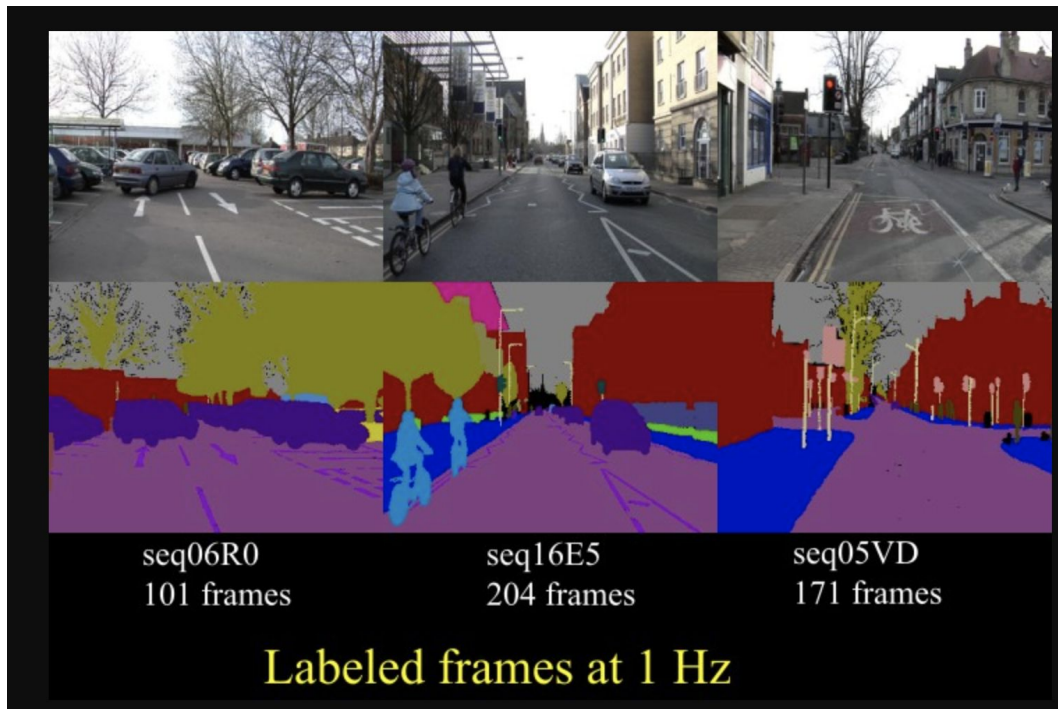
6D-Vision

<http://www.6d-vision.com/scene-labeling>



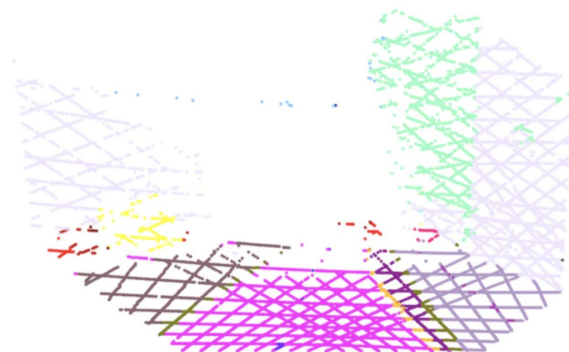
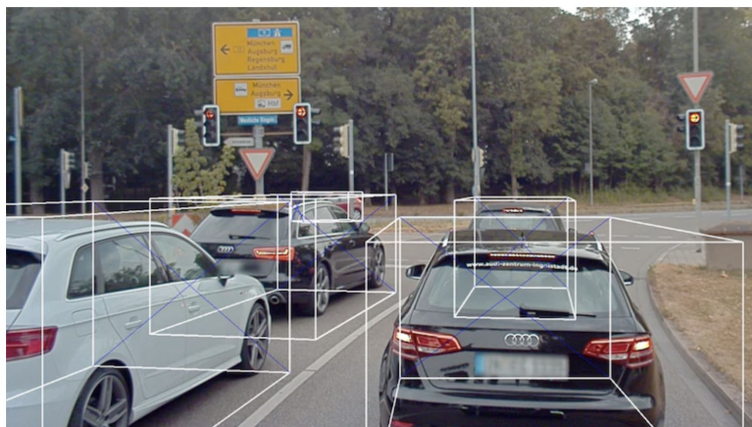
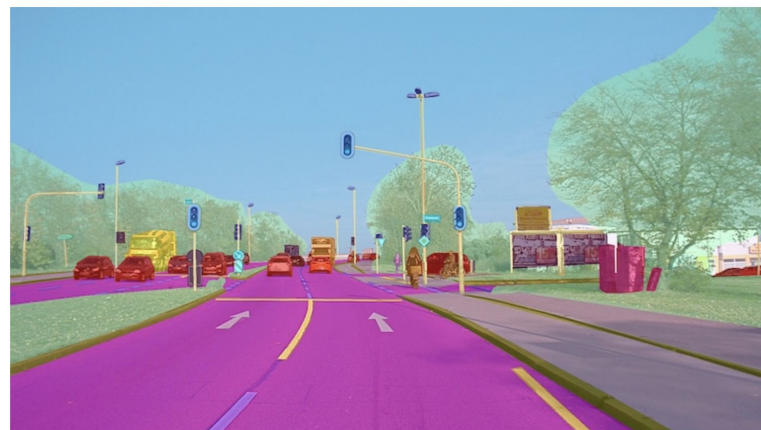
CamVid

<http://mi.eng.cam.ac.uk/research/projects/VideoRec/CamVid/>



Audi Dataset

- <https://www.a2d2.audi/a2d2/en/dataset.html>
- Semantic segmentation
- Point cloud segmentation
- 3D bounding boxes



Synthetic Data Generation using Game Engines

- Dane wygenerowane przez silnik gry, które ma udawać rzeczywisty obraz
- Virtual KITTI
<https://europe.naverlabs.com/blog/announcing-virtual-kitti-2/>
- SYN- THIA
<http://synthia-dataset.net/>
- Carla
<https://github.com/DanielHfmr/Carla-Object-Detection-Dataset>
- Playing for Data
<https://arxiv.org/abs/1608.02192>
(NIEDOSTĘPNY)



[The SYNTHIA dataset](http://synthia-dataset.net/)

Nasz autonomiczny pojazd

- Spotkanie za 2,3 tygodnie
- Pokazanie trenowania na danych
 - Model do pojazdów, Segmentation
 - Model do 3D boxes
 - Pomoc przy parkingu
 - Tworzenie danych testowych i labelowanie ich na podstawie gry Parking.

<https://github.com/dataworkshop/dw-poznan-project>

Dziękuję

Kolejne kroki

- Spotkanie za 2,3 tygodnie
- Pokazanie trenowania na danych

<https://github.com/dataworkshop/dw-poznan-project>

Dziękuję