A recent publication “On Pre-Trained Image Features and Synthetic Images for Deep Learning” uses real images as background for synthetically generated objects in order to create a dataset for Deep Learning algorithms. The availability of a suitable dataset is fundamental for the training and validation of Deep Neural Networks.

Planned Activities

The aim of this thesis is to use the same approach adopted by the publication in question, focusing on the improvement of a real-image dataset “augmented” by synthetic objects. We would like to find an answer to the following questions:

- Using the increased dataset, does the accuracy of the system increase for all classes of objects, only for some of them, or does it not increase at all?
- Is there a limit number of synthetic objects beyond which the accuracy of the training does not increase anymore?
- Considering a set of Object Detection algorithms, what effect does the use of the increased dataset have on them? Are there any algorithms that are more influenced than others by this technique?

It is required that the candidate has significant mathematical foundations, analytical skills and excellent programming skills, especially in Python. The candidate will be supported by highly qualified personnel and when necessary will be able to access the company’s computing resources (IBM PowerAI equipped with NVIDIA P100 and V100 cards).

Check these Links before moving on

https://arxiv.org/abs/1710.10710
https://github.com/tensorflow/models/tree/master/research/object_detection

Who we’re looking for

Students that are about to get their master degree in: Computer Science, Mathematics
Skills: Python, C/C++, math, exp. w. at least one among TensorFlow / PyTorch / BigDL, excellent skills in mathematical analysis, ability to analyse and research scientific publications
Duration of this Projects: 6-8 months

How to contact us

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