Internship Offer

Title: Domain Adaptation with Vision transformers

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Duration: 4-6 months

Description: The astonishing performance of **deep learning** models in a large variety of applications is partially ascribed to the availability of large-scale datasets with abundant annotations. Over the years, several solutions have been proposed to avoid prohibitively expensive and time-consuming data labeling such as transfer learning or domain adaptation strategies.

In particular, **unsupervised domain adaptation** methods leverage the knowledge extracted from labeled data of one (or multiple) source domain(s) to learn a prediction model for a different but related target domain where no labeled data are available.

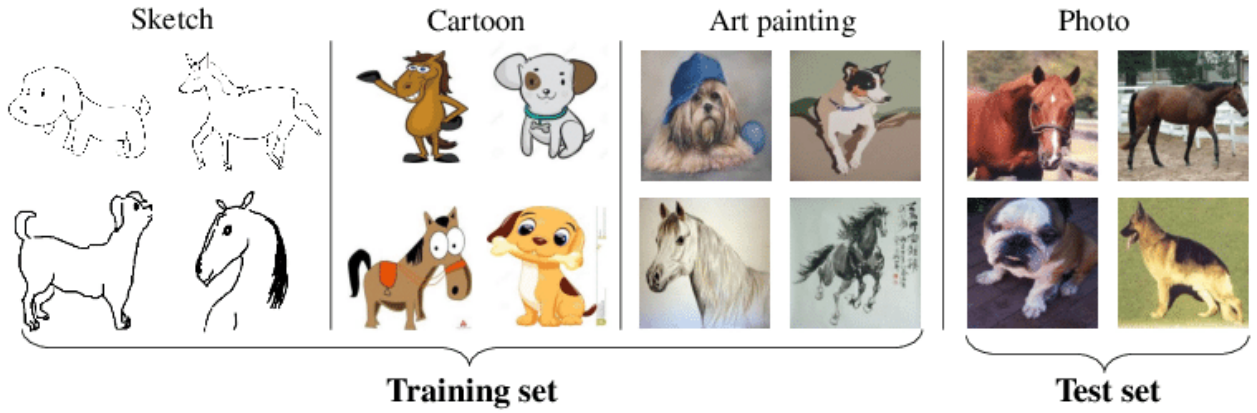

Fig1: Illustration of the domain adaptation problem for object recognition. In this case, an object recognition model is trained on annotated images that are either sketches, cartoons, or paintings. The goal is to obtain a model with good performances on real photos.

Very recently, vision transformers have been used as an alternative to convolutional neural networks for many vision tasks. In this project, we address the problem of domain adaptation using a neural architecture based on vision transformer [1]. The goal is to understand how we can leverage the representation power of vision transformer to design novel domain adaptation methods.

Pré-requis : bases of machine learning and deep learning

Références :

[1] Unsupervised Domain Adaptation by Backpropagation, Yaroslav Ganin, Victor Lempitsky https://arxiv.org/abs/1409.7495

[2] Revisiting Batch Normalization For Practical Domain Adaptation, Yanghao Li, Naiyan Wang, Jianping Shi, Jiaying Liu, Xiaodi Hou, https://arxiv.org/abs/1603.04779

[3] An Image is Worth 16x16 Words: Transformers for Image Recognition at Scale, Alexey Dosovitskiy, Lucas Beyer, Alexander Kolesnikov, Dirk Weissenborn, Xiaohua Zhai, Thomas Unterthiner, Mostafa Dehghani, Matthias Minderer, Georg Heigold, Sylvain Gelly, Jakob Uszkoreit, Neil Houlsby, https://arxiv.org/abs/2010.11929

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