
Thedal: An Object Detection Framework using Transfer Learning

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Abstract

Transfer learning is a technique used in deep learning to transfer the necessary parameters from the learnt model to another model to avoid training the latter and thus saving time and cost. However, currently this technique is only applied to same classes of objects. In this paper, we attempt to solve this by carefully choosing base model for given object category, transfer the parameters to create new target model to identify objects of given category.

1 Introduction

Transfer learning is a technique used in deep learning to transfer the necessary parameters from the learnt model to another model to avoid training the latter and thus saving time and cost. However, currently this technique is only applied to same classes of objects. For example, a base model trained to identify building is again used to train another target model with same or similar parameters. So models train models to detect buildings, but specificity of the object classes stop there. A model trained to identify building cannot identify temples or auditoriums. In this paper, we attempt to solve this by carefully choosing base model for given object category, transfer the parameters to create new target model to identify objects of given category. That is if we need to identify temples, we take base model for buildings, transfer the learning to new target model to identify temples without training target model from scratch.

2 System Overview

Apart from regular pre processing of input data (pictures, description etc) there are primarily two stages of operation in the framework.

- Select and Use Base Model
- Transfer Learning

The output of the framework could be anything as desired by the user, and typically we could start with serving as an API. The pre processing is useful for both the stages and the inputs could not only be given samples of target objects but also descriptions and any metadata as provided by the framework as it grows.

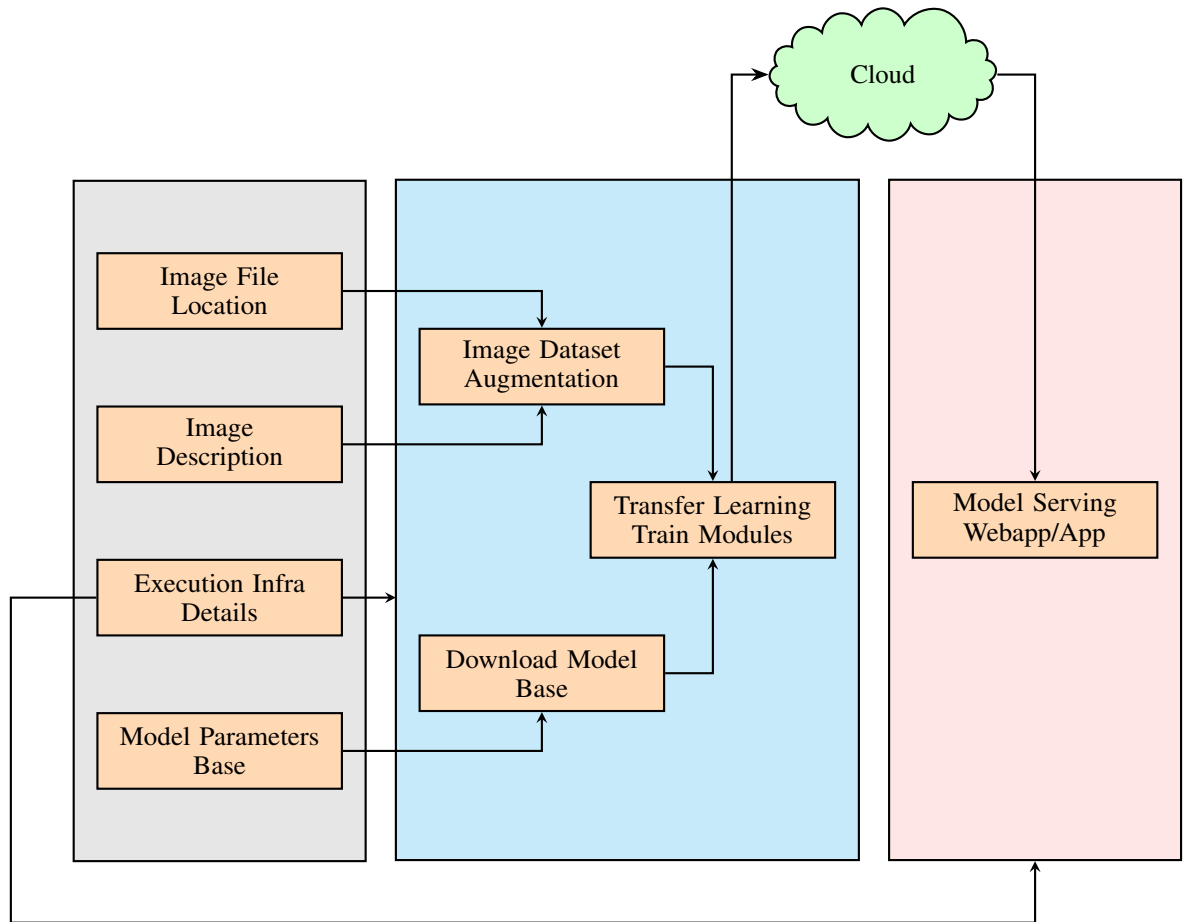


Figure 1: System Overview

References

[1]Jason (Jinquan) Dai, Yiheng Wang and Xin Qiu (1995) Template-based algorithms for connectionist rule extraction. In G. Tesauro, D.S. Touretzky and T.K. Leen (eds.), *Advances in Neural Information Processing Systems* 7, pp. 609–616. Cambridge, MA: MIT Press.