

TRANSFER LEARNING

Training CNNs

- You need a lot of a data if you want to train/use CNNs

Transfer Learning

image

conv-64

conv-64

maxpool

conv-128

conv-128

maxpool

conv-256

conv-256

maxpool

conv-512

conv-512

maxpool

conv-512

conv-512

maxpool

FC-4096

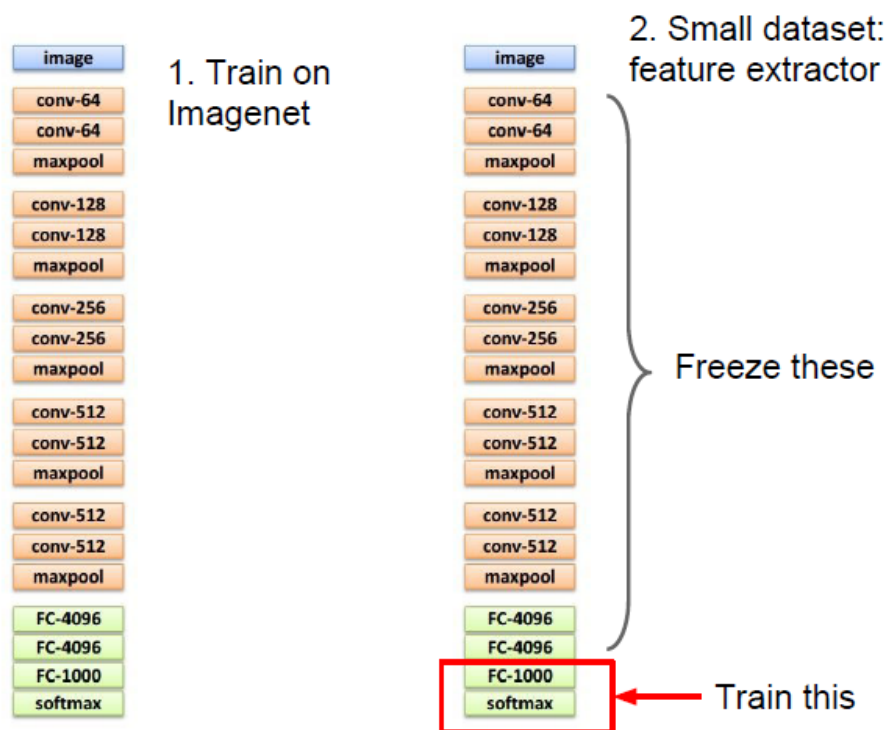
FC-4096

FC-1000

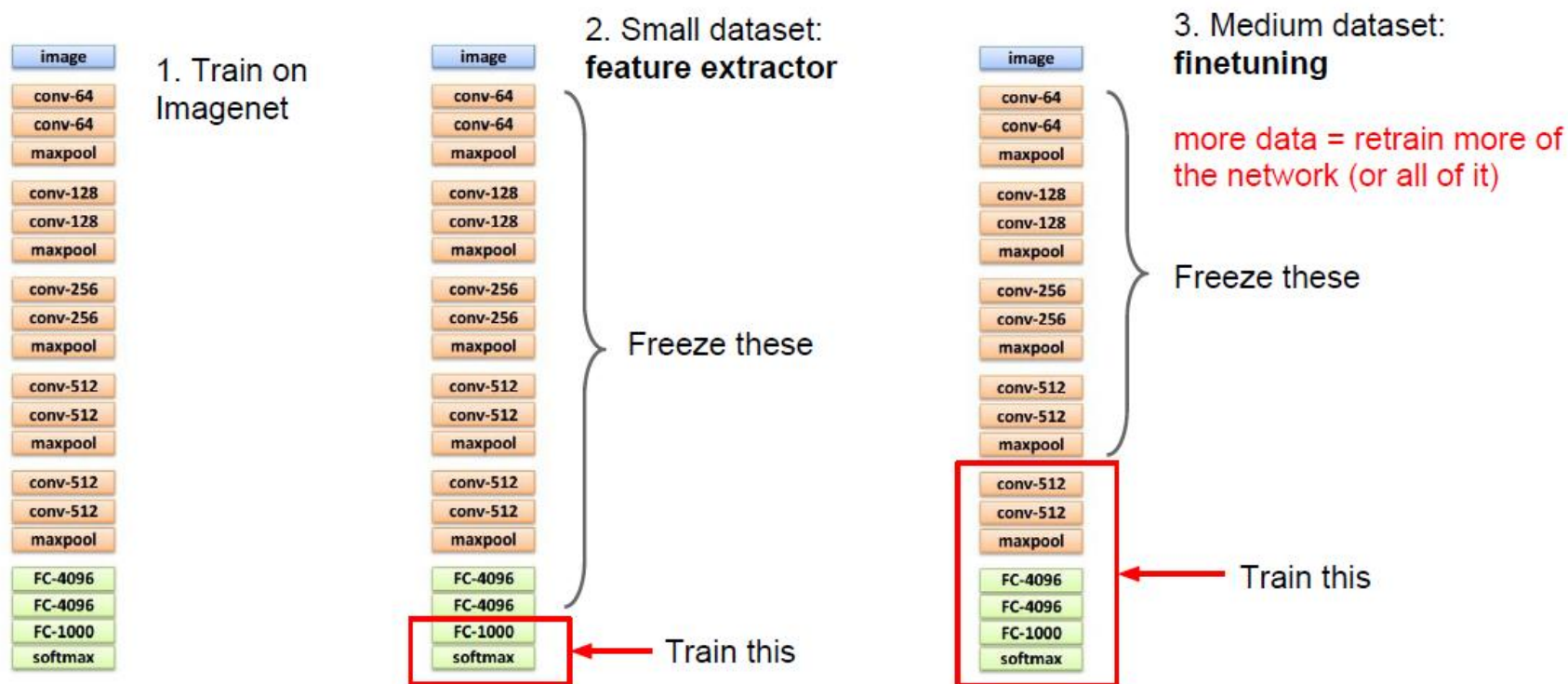
softmax

1. Train on
Imagenet

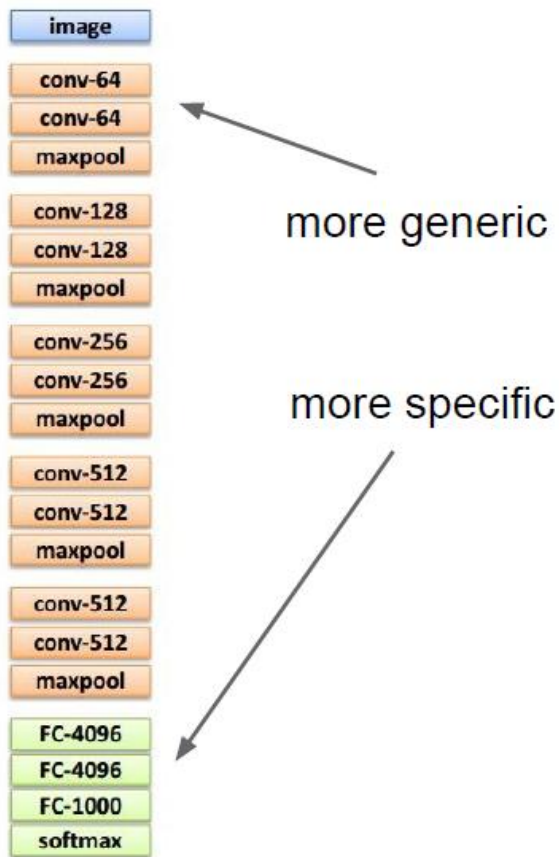
Transfer Learning



Transfer Learning

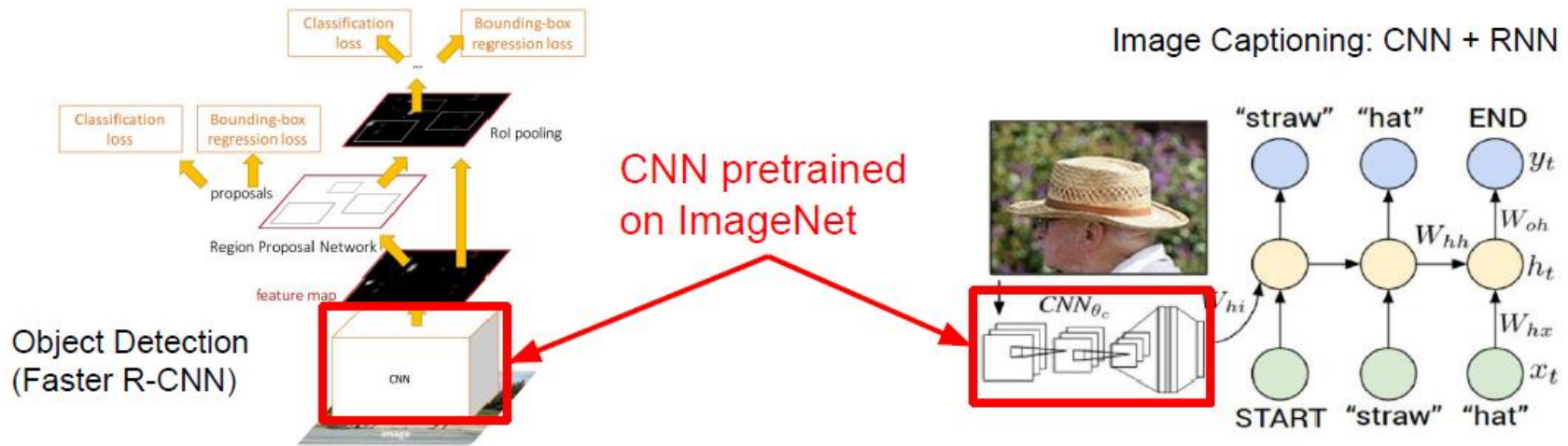


Transfer Learning

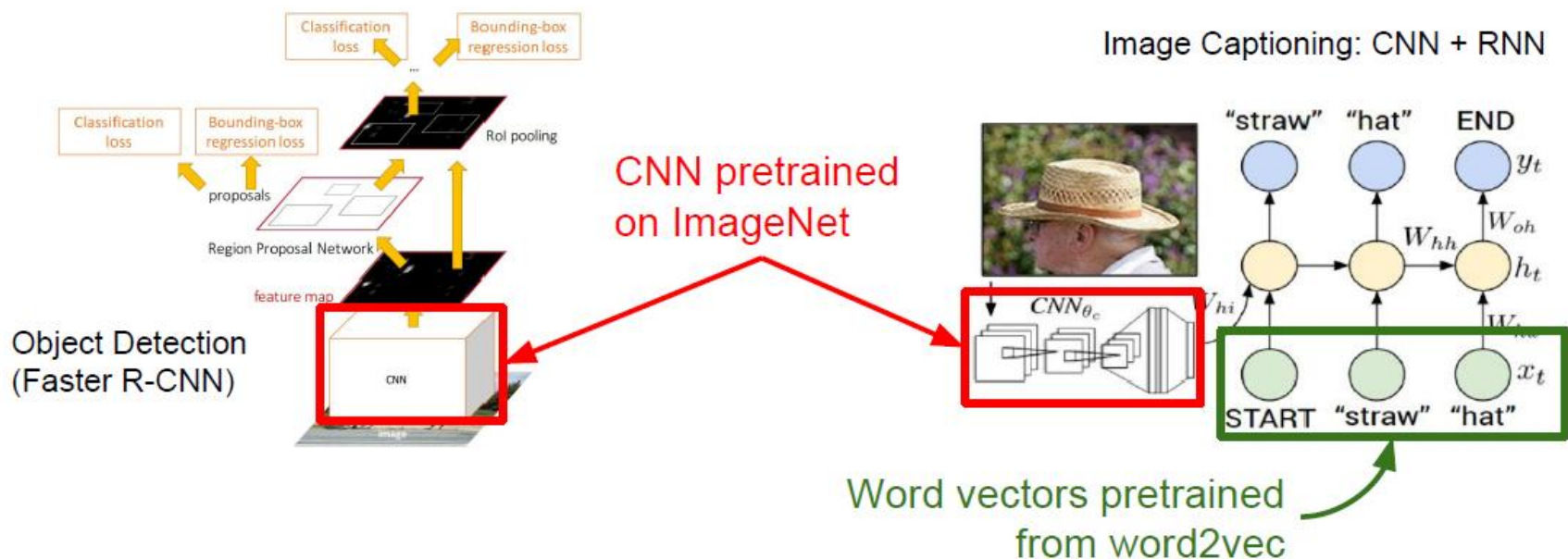


	Similar dataset	Different dataset
Very little data	Use Linear Classifier on top layer	You're in trouble
A lot of data	Finetune a few layers	Finetune a larger number of layers

Transfer Learning is pervasive



Transfer Learning is pervasive



Model Zoo

- If you have some dataset of interest but it has $< \sim 1\text{M}$ images
 - Find a very large dataset that has similar data, train a big ConvNet there.
 - Transfer learn to your dataset
- Caffe ConvNet library has a “**Model Zoo**” of pretrained models:
 - <https://github.com/BVLC/caffe/wiki/Model-Zoo>