# TTIC 31230, Fundamentals of Deep Learning

David McAllester, Winter 2020

# Supervised Imagenet Pretraining

# Supervised ImageNet Pretraining

CBNet: A Novel Composite Backbone Network Architecture for Object Detection Liu et al., Sept. 2019 (COCO leader as of February 26, 2020).

Generally speaking, in a typical CNN based object detector, a backbone network is used to extract basic features for detecting objects, which is usually designed for the image classification task and pretrained on the ImageNet dataset.

# Instagram Pretraining, Mahajan et al., May 2018

In our experiments, we train standard convolutional network architectures to predict hashtags on up to 3.5 billion public Instagram images.

To make training at this scale practical, we adopt a distributed synchronous implementation of stochastic gradient descent with large (8k image) minibatches, following Goyal et al. 2017.
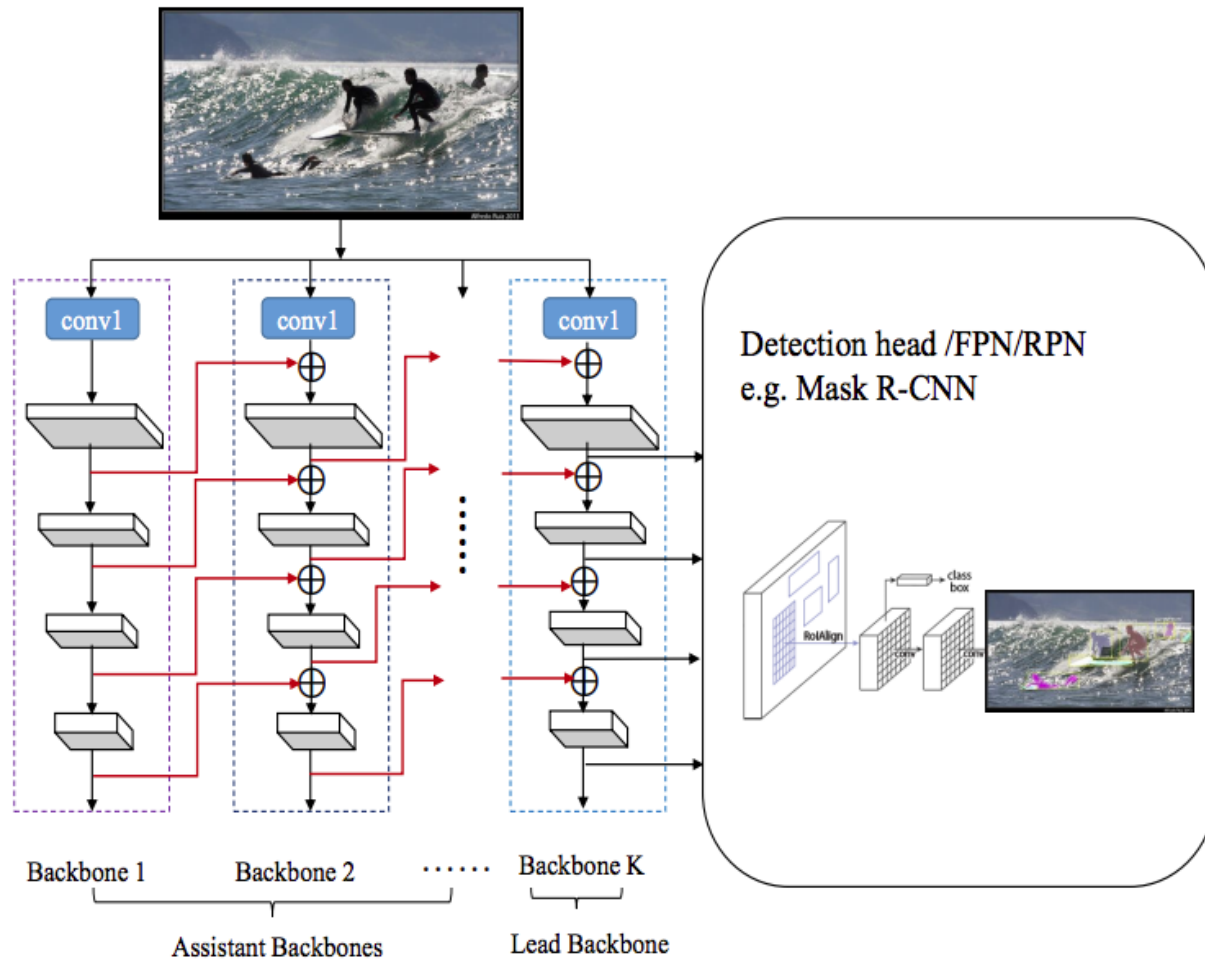
# Instagram Pretraining
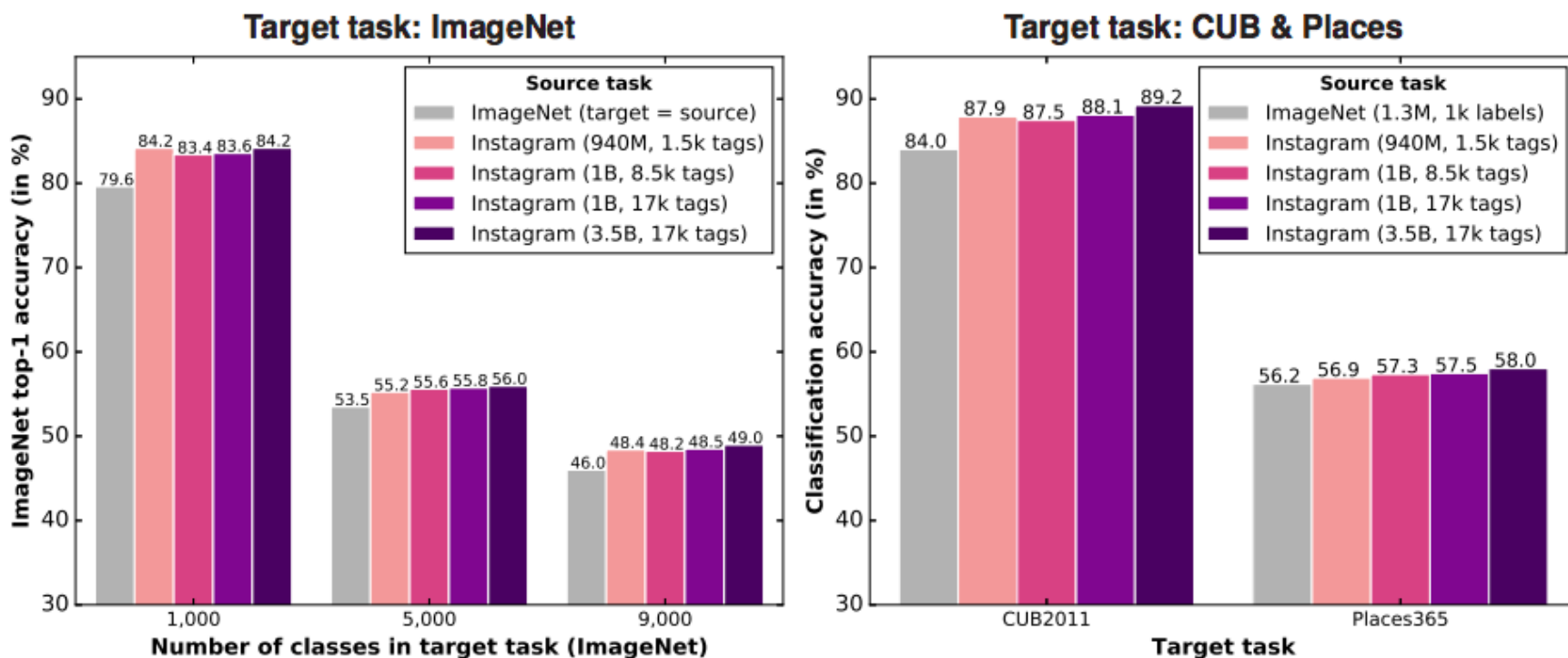
# Rethinking ImageNet Pretraining, He et al., Nov. 2018

We report competitive results on object detection and instance segmentation on the COCO dataset using standard models trained from **random initialization**.

# Rethinking ImageNet Pretraining, He et al., Nov. 2018



bbox AP: R50-FPN, GN

typical fine-tuning schedule

— random init
— w/ pre-train

iterations ($10^5$)
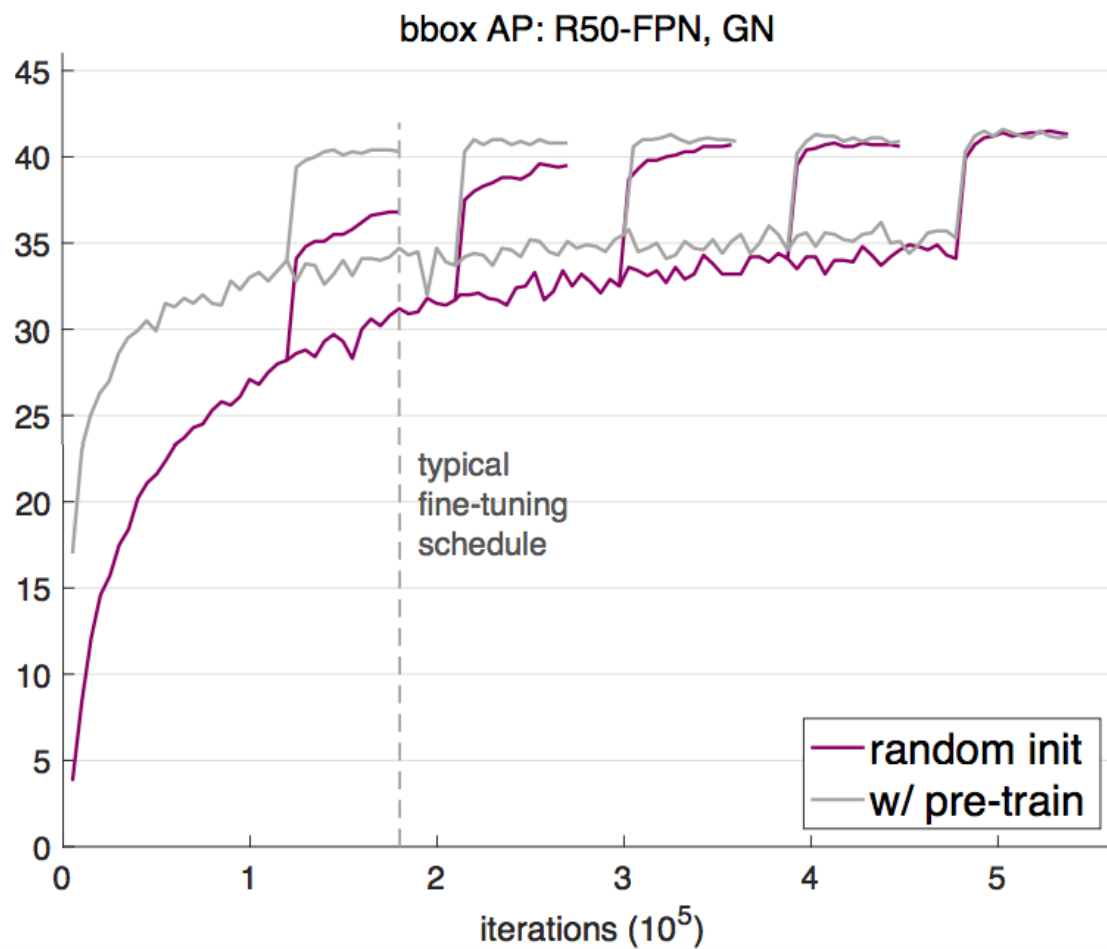
# CBNet (COCO leader as of Feb, 2020)

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We initialize each assembled backbone of CBNet with the pretrained model of the single backbone which is widely and freely available today, such as ResNet and ResNeXt

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