Using transfer learning to easily classify objects belonging to different categories
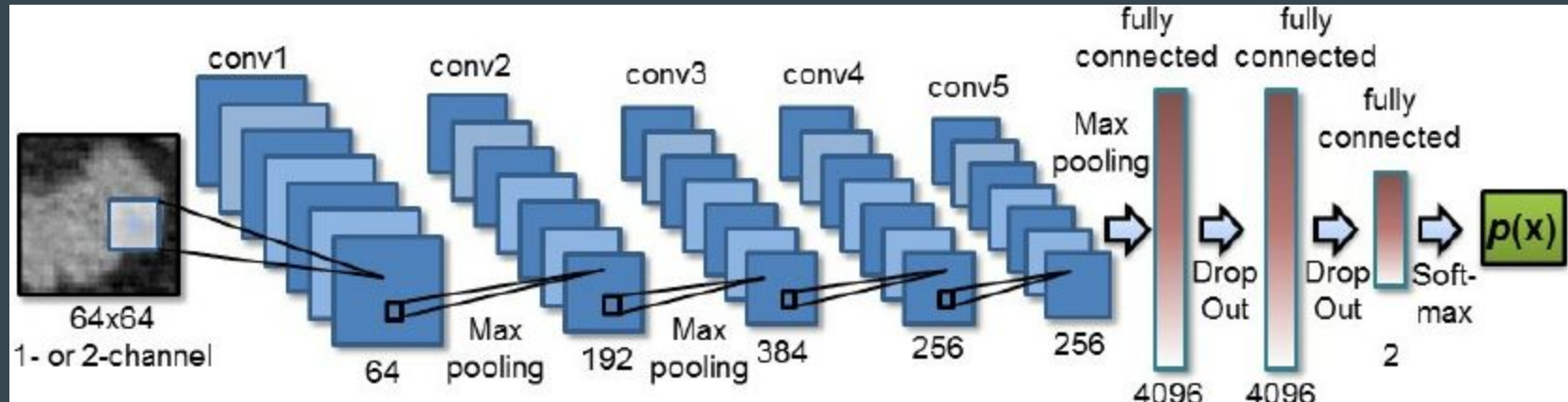
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Agenda

- Why training a network from scratch isn't always the best idea?
- Why transfer learning?
- Inception-V3 by Tensorflow
- Steps to classify a custom dataset

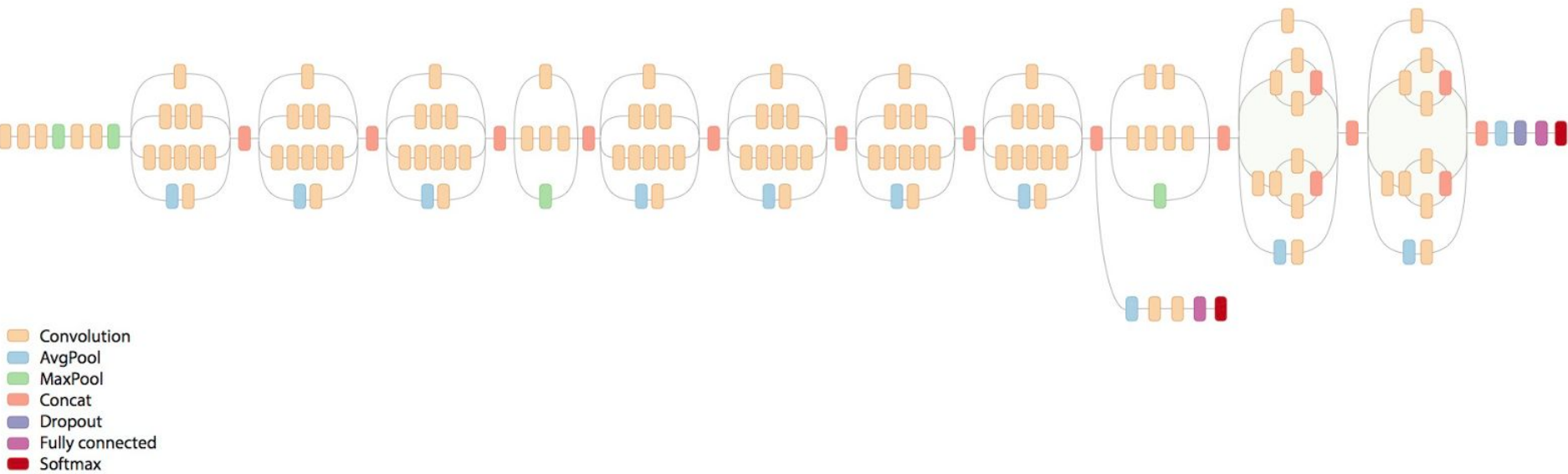# Why training a network from scratch isn't always the best idea?

A typical Deep Learning Model for computer Vision

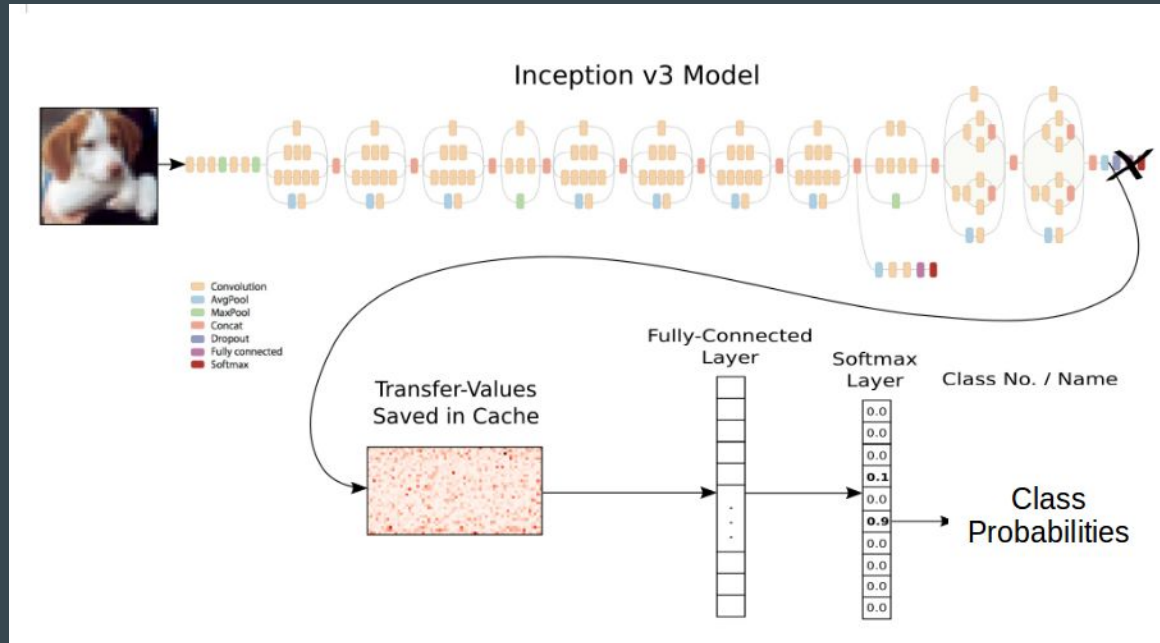# Why training a network from scratch isn't always the best idea?

- Availability of Data
- Computation Power
- Time

Inception V3

Convolution
AvgPool
MaxPool
Concat
Dropout
Fully connected
Softmax

Retraining the inception Model

Retraining the inception Model: First step

- Install bazel
- Clone tensorflow from source
- Build Tensorflow Image retraining module
- Download the dataset
  - Image folder/
    - Class1
    - Class2
    - Class3
- Retrain on the dataset
- Test on an image

Retraining the inception Model: Second step

- Freeze first k layers and retrain the last (n-k) layers

    for layer in model.layers[:k]:

        layer.trainable = False

    for layer in model.layers[k:]:

        layer.trainable = True

Links and Resources

- https://github.com/HusainZafar/TransferLearningTutorial
- https://keras.io/applications/
- https://blog.keras.io/building-powerful-image-classification-models-using-very-little-data.html

Thank you