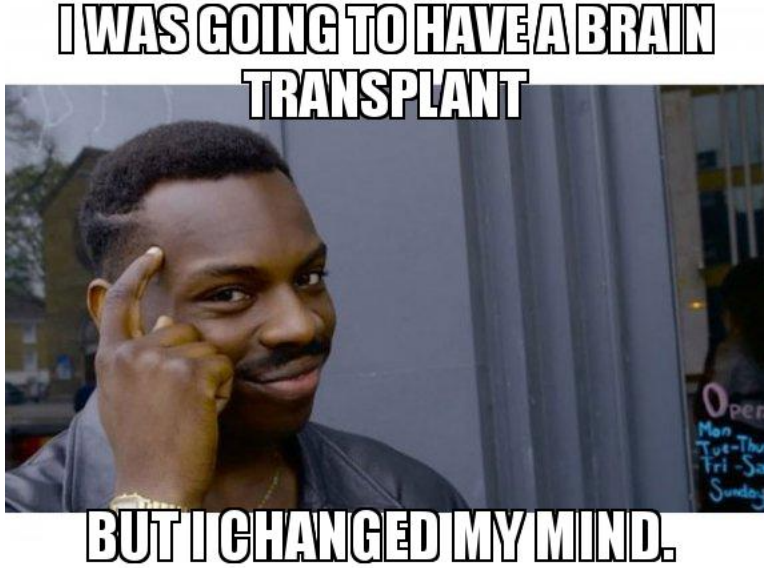

FruitPunch.AI/Code

Epoch 9: Transfer Learning

08.10.2019

M. Alican Noyan

Applications https://keras.io/applications/

Keras Applications are deep learning models that are made available alongside pre-trained weights. These models can be used for prediction, feature extraction, and fine-tuning.

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Available models

Models for image classification with weights trained on ImageNet:

- Xception
- VGG16
- VGG19
- ResNet, ResNetV2
- InceptionV3
- InceptionResNetV2
- MobileNet
- MobileNetV2
- DenseNet
- NASNet

IMAGENET

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What do these images have in common? *Find out!*

Visualizing and Understanding Convolutional Networks

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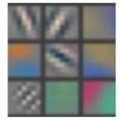
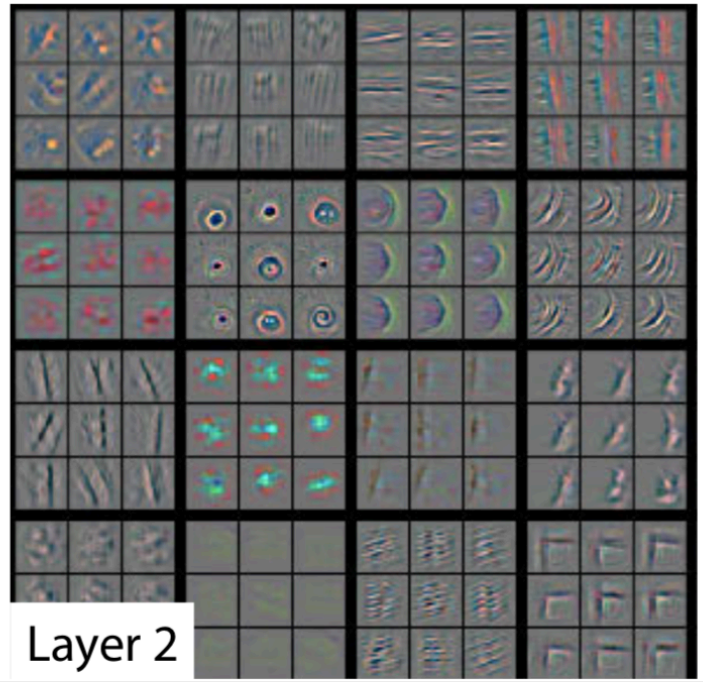
Rob Fergus FERGUS@CS.NYU.EDU
Dept. of Computer Science, Courant Institute, New York University

Abstract

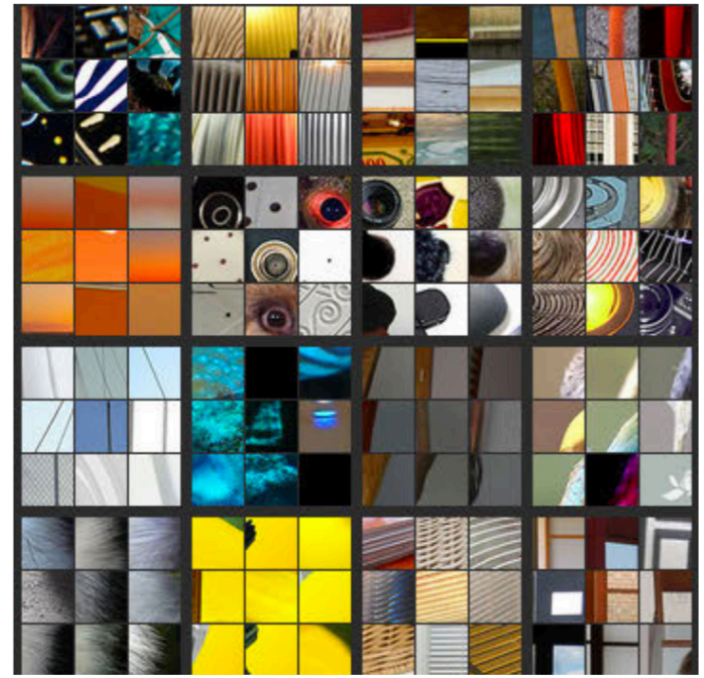
Large Convolutional Network models have recently demonstrated impressive classification performance on the ImageNet benchmark (Krizhevsky et al., 2012). However there is no clear understanding of why they perform so well, or how they might be improved. In this paper we address both issues. We introduce a novel visualization technique that gives insight into the function of intermediate feature layers and the operation of the classifier. Used in a diagnostic role, these visualizations allow us to find model architectures that outperform Krizhevsky *et al.* on the ImageNet classification benchmark. We also perform an ablation study to discover the performance contribution from different model layers. We show our ImageNet model generalizes well to other datasets: when the softmax classifier is retrained, it convincingly beats the current state-of-the-art results on Caltech-101 and Caltech-256 datasets.

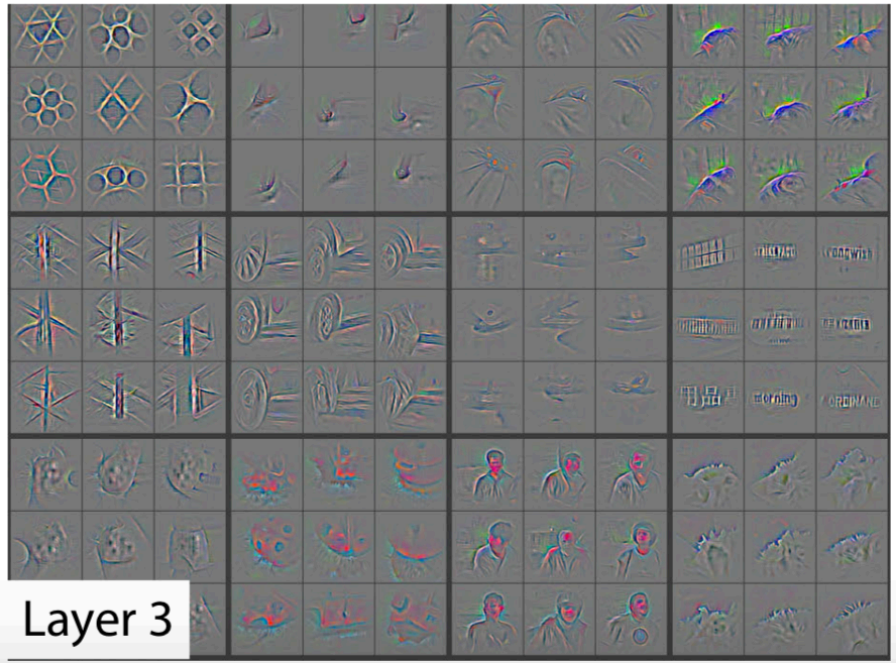


Layer 1



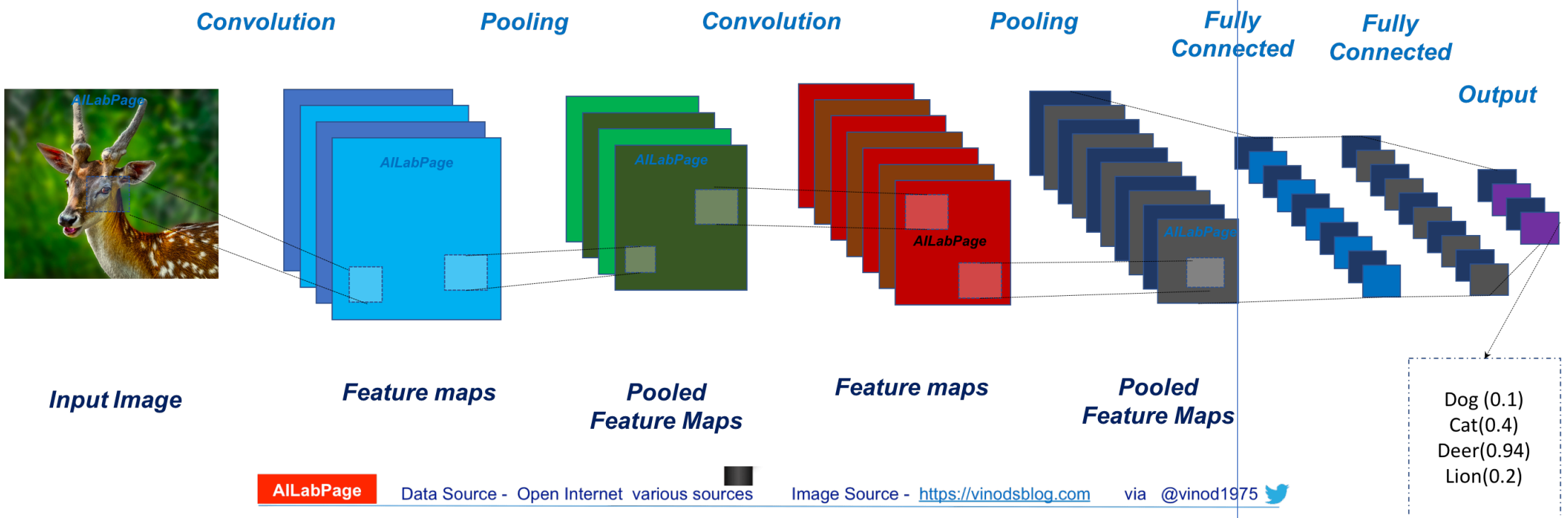
Layer 2





Layer 3

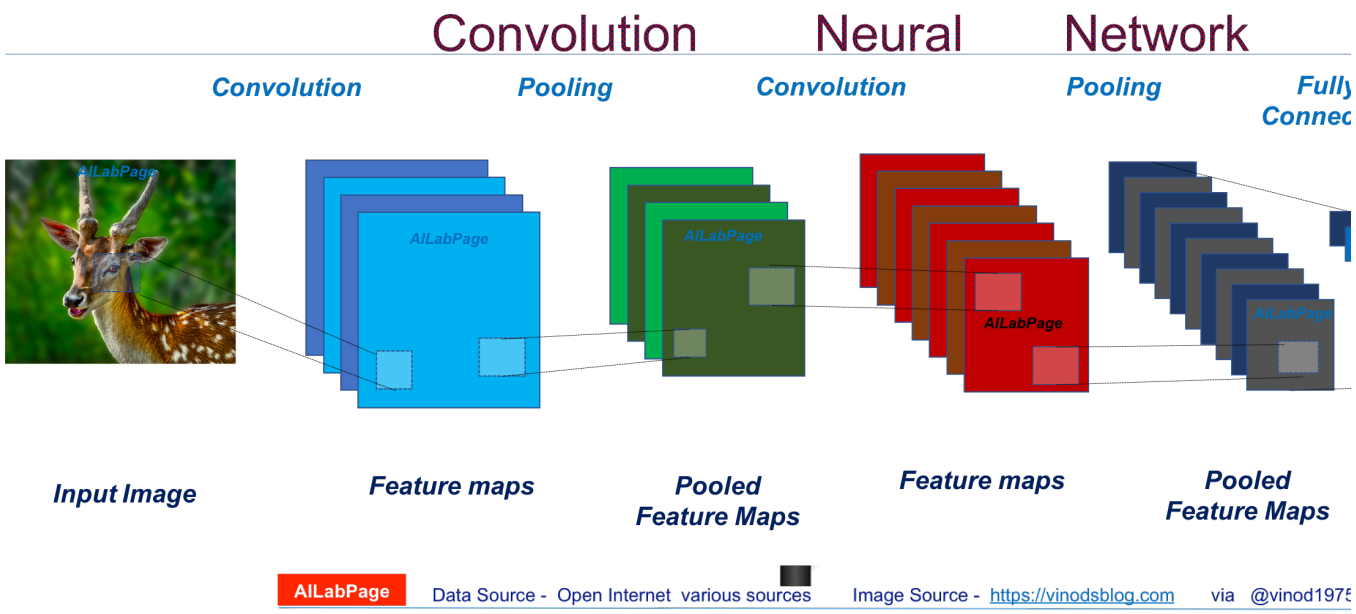
Convolution Neural Network



AILabPage Data Source - Open Internet various sources Image Source - https://vinodsblog.com via @vinod1975

Use as is

Modify



Extract features

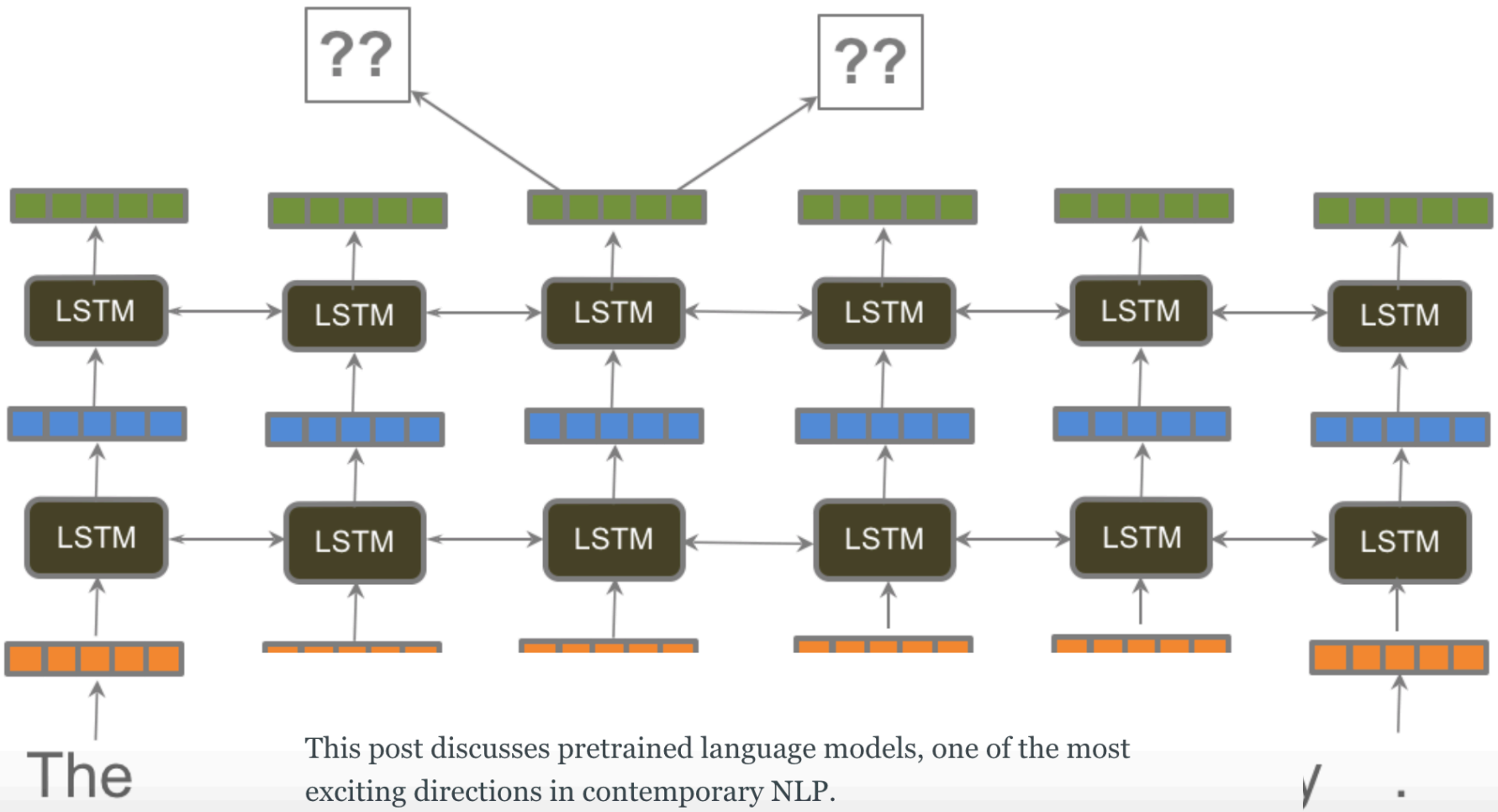
Features

Train a new model

Predictions

12 JULY 2018 / NATURAL LANGUAGE PROCESSING

NLP's ImageNet moment has arrived



This post discusses pretrained language models, one of the most exciting directions in contemporary NLP.

Challenge

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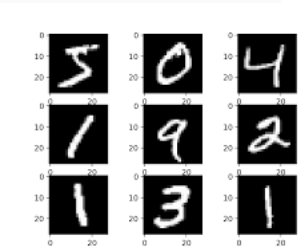
- MobileNet
- MobileNetV2
- DenseNet
- NASNet

Model	Size	Top-1 Accuracy	Top-5 Accuracy	Parameters	Depth
Xception	88 MB	0.790	0.945	22,910,480	126
VGG16	528 MB	0.713	0.901	138,357,544	23
VGG19	549 MB	0.713	0.900	143,667,240	26
ResNet50	98 MB	0.749	0.921	25,636,712	-
ResNet101	171 MB	0.764	0.928	44,707,176	-
ResNet152	232 MB	0.766	0.931	60,419,944	-
ResNet50V2	98 MB	0.760	0.930	25,613,800	-
ResNet101V2	171 MB	0.772	0.938	44,675,560	-
ResNet152V2	232 MB	0.780	0.942	60,380,648	-
InceptionV3	92 MB	0.779	0.937	23,851,784	159
InceptionResNetV2	215 MB	0.803	0.953	55,873,736	572
MobileNet	16 MB	0.704	0.895	4,253,864	88
MobileNetV2	14 MB	0.713	0.901	3,538,984	88
DenseNet121	33 MB	0.750	0.923	8,062,504	121
DenseNet169	57 MB	0.762	0.932	14,307,880	169
DenseNet201	80 MB	0.773	0.936	20,242,984	201
NASNetMobile	23 MB	0.744	0.919	5,326,716	-
NASNetLarge	343 MB	0.825	0.960	88,949,818	-

MNIST



300 training images