Advanced Computer Vision Week 13

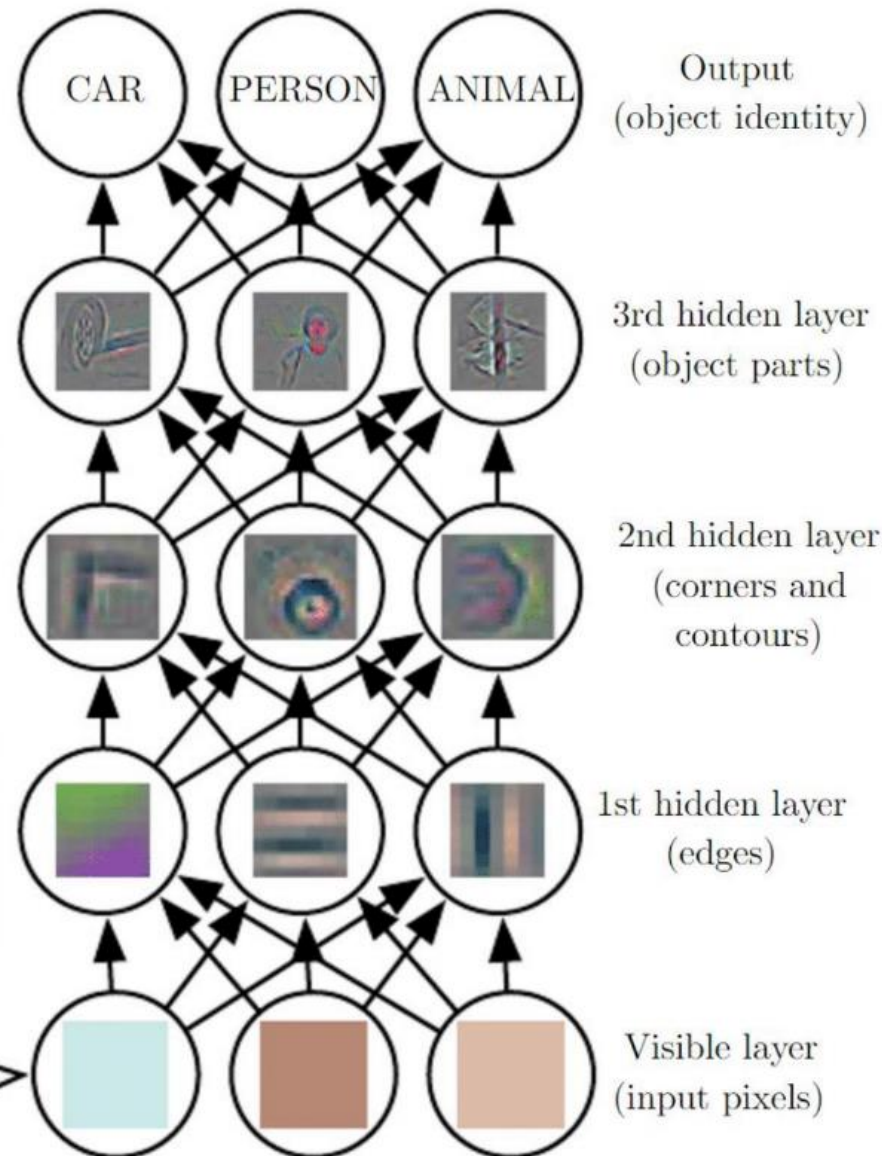Nov. 29, 2022

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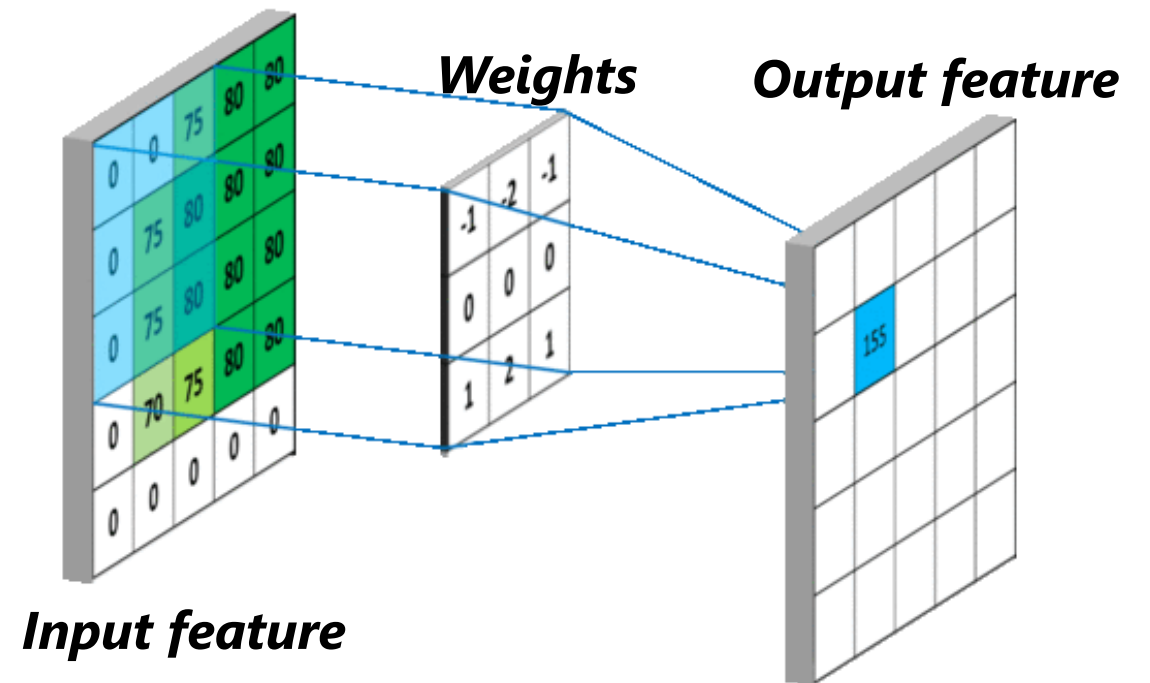
Exploring Filters & Features of Neural Networks

Deep Learning is Representation Learning

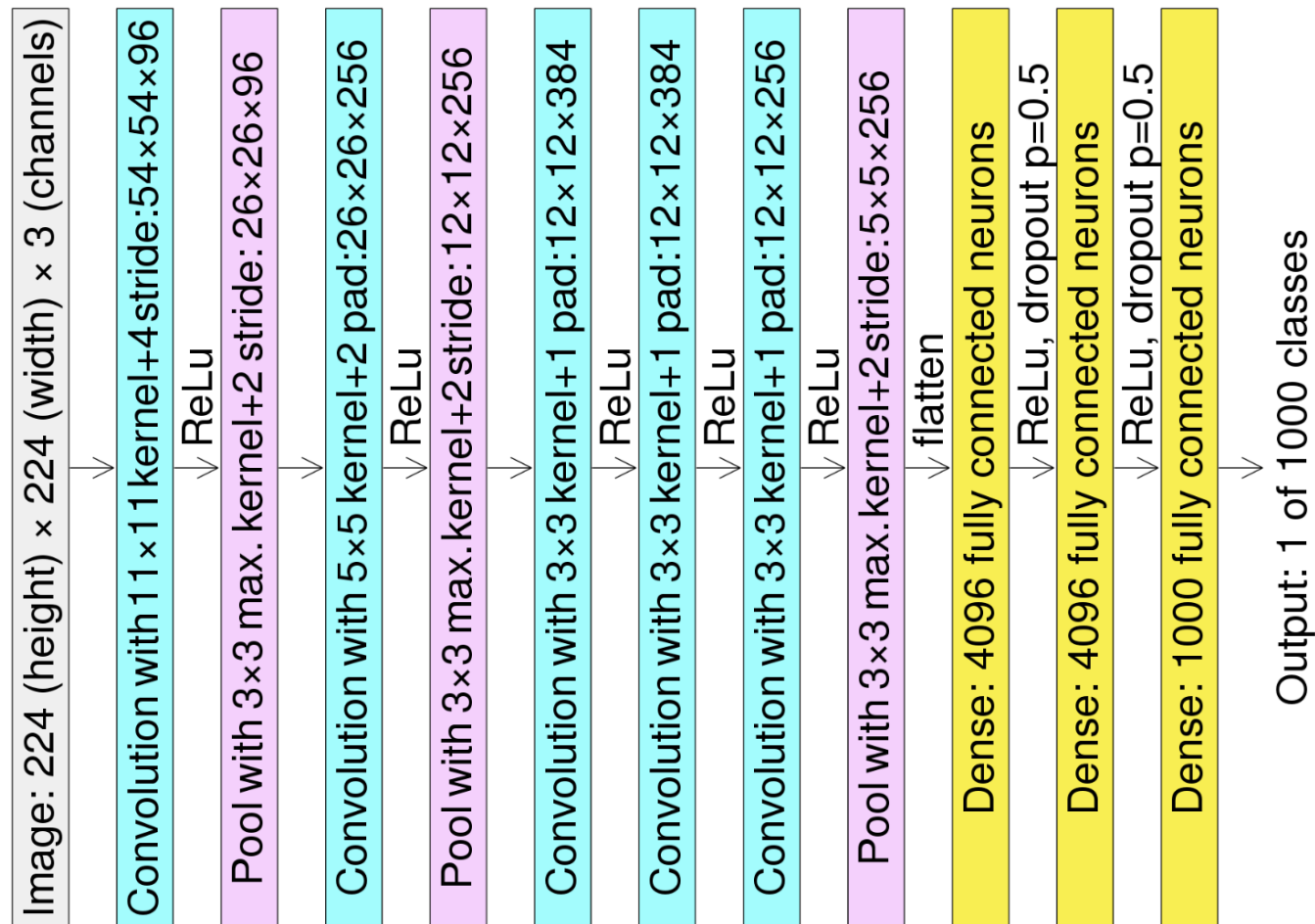*Weight of layer*
= Filter = Kernel

Feature
= Activation

Convolutional Neural Network (CNN)

Weights   *Output feature*

Input feature

→ Visualization of the intermediate features

→ We will see how to explore CNN!

[1] Goodfellow, et al., "Deep Learning", 2017

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How to Access Kernels & Activations?

AlexNet (5 Conv + 3 FC)

Basic PyTorch method

```
>> model.features[k].weight.data
```

Internal method to access the activations

```
>> activation['conv_k']
```

→ **How to achieve better filters & features?**

Experiments

Image classification – MNIST Fashion

Code is available in https://view.kentech.ac.kr/f088fa7f-874e-44bc-bd6d-6084b42dfdf7

$ python alexnet.py

→ Basic classficiation

Image classification – CIFAR10

$ python alexnet_cifar10.py

→ Directly access kernels & activations inside the neural networks.

→ Compare the scratch & pretrained models.