VGG Net

Ex 10.2: Narrow vs Wide Kernels

1. A stack of $S$ $3 \times 3 \times C \times \cancel{3}C$ ~~channels~~ Kernels

$$N_{p,1} \approx S \cdot (3^2 c^2) \quad \text{parameters}$$

effective kernel size / receptive fields : $3 + (3-1)(S-1)$

$$= 2S + 1$$

2. Single ~~25~~ $(2S+1) \times (2S+1) \times C \times C$ ~~Rese~~ kernels

$$N_{p,2} \approx (2S+1)^2 c^2$$

$$\frac{N_{p,1}}{N_{p,2}} = \frac{9S}{(2S+1)^2} \qquad \begin{array}{cccc} S=1 & 2 & 3 & 4 \\ = & 100\% & 72\% & 55\% & 44\% \end{array}$$

10-34
10-35
10-36
10-37 — Residual block is a must when we have a deep
architecture

10-38

## 10.4    Networks and Modules for object detection

10-43

## 10.5  Networks and modules for image segmentation

10-46

10-46 —  V-Net. $\hat{=}$ 3D  U-net

## 10.6   Networks and modules for generative tasks

10-49

# 11. Future topics and outlooks

## 11.1 Important but unaddressed topics

XAI — visualization — Grad CAM and guided-CAM for change in weights etc for the feature maps.

t - SNE

Causal inference → next big thing

## 11-9 Adversarial N/w and attack