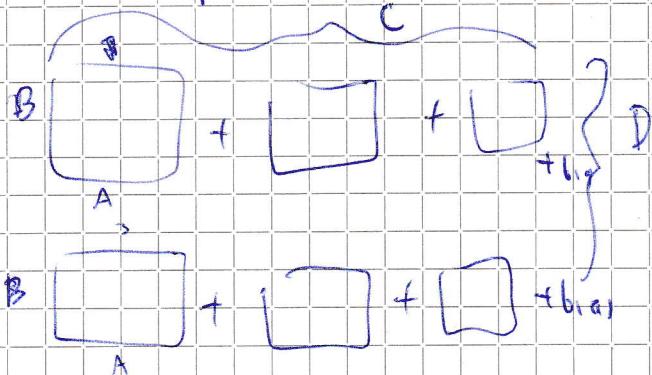


Optimierung:

+ Lernrate

Convolutional Neural Network

Kernel - shape (A, B, C, D)



— Konvertierung mehrerer shape

Kernel has a convolutional filter & a bias.

Pooling → Max Pooling

(popular used)

Conv 2D

Max Pooling 2D

Flatten

Global Max Pooling 2D

Dienstag, 12.12.2023

Convolutional Neural Network

(Seite 539 - 553)



GoogleNet

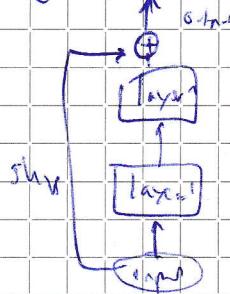


Block : 1×1 , 3×3 , 5×5 , pool, 3×3 , reduce, 5×5 , reduce

1	\downarrow	1	\downarrow	1
1×1		1×1		1×1
after pooling		before 3×3		before 5×5

AlexNet

ReLU \rightsquigarrow Vanishing gradient handling with Shortcut / Skip-Verbindung



Mittwoch, 13.12.2013

Complex Convolutional Neural Network

LeNet-5

AlexNet

GoogLeNet

↳ 1x1 Convolution

VGG

↳ VGG-16 & VGG-19

ResNet

↳ Batch Normalization

Xception

Huggingface

Image-Processing & Transfer Learning

Donnerstag, 14.12.2023

Transfer Learning

- ↳ Tag OS CNN Example Class
- ↳ Tag OS Image Dataset from directory

Objekt Erkennung → ~~Buch~~

Coding Projekte

- ↳ Objekt lokalisierung (object localization) ↳ Buch Seite 561
- ↳ Semantische Segmentierung (semantic segmentation) ↳ Buch Seite 567
- ↳ PunktWolken (point clouds) ↳ Buch Seite 572
(3D)

make sense ai → object labeling

YOLO v3 Architecture ~ Object Detec.

U-Net

Transpose Layer & Upsampling 2D

↳ geht er herum.

Semantische Segmentation

↳ Dimensionen (Anzahl der Bilder, Höhe, Breite, Anzahl der Klassen)

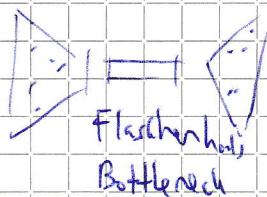
Explainable AI

- ↳ GradCam
- ↳ DeepDream - Verfahren
- ↳ Permutation Feature Importance
- ↳ SHAP (SHapley Additive explanations)
- ↳ Atentionschichten / Attention Layer

GAN (Generative Adversarial Network)

- Neural Style Transfer

- DeepFake



- Autoencoder with 2 Decoder

- Super-resolution ~ U-Net

- Nachcolorieren ~ U-Net

- Bildverwetzung → picture "extrapolation"

- GAN: unsupervised learning with Generator & Discriminator

- Bild-Generation auf Basis eines Textinputs → Dall-E, Stable-Diffusion

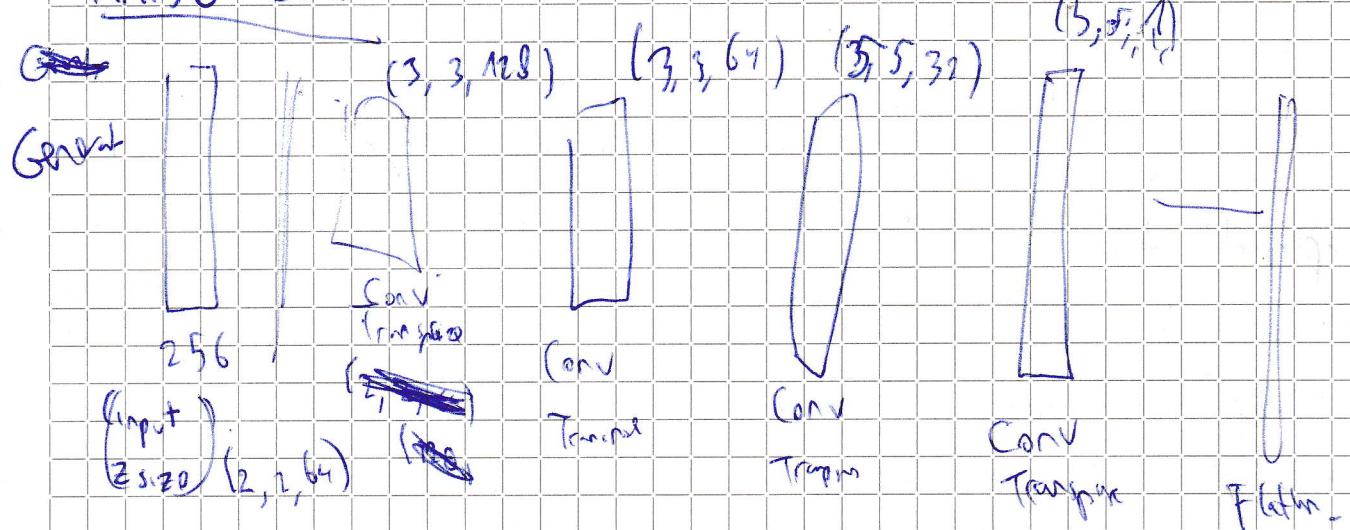
- DeepDream - Verfahren

Unsupervised GANs / Unüberwachte GANs

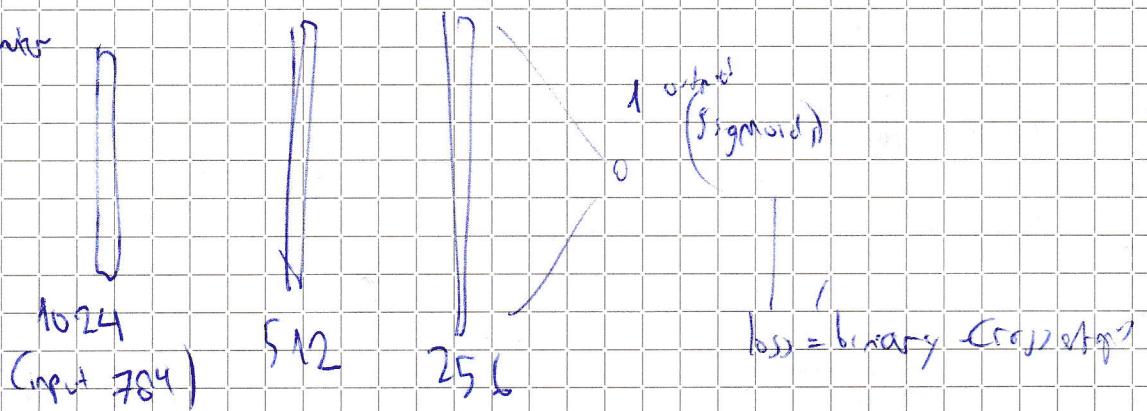
GAN für mnist-Ziffern

MNIST GAN

~~Gen~~



Discriminator



discriminat. trainable = False \leftrightarrow to freeze discriminator

erium podcast

Meetup.com \rightarrow Data Science Meetup
 \rightarrow Machine Learning Meetup