

Computer vision

Agenda:

- ✓ ① Introduction to computer vision
- ✓ ② Image processing → Opencv, Pillow ✗
- ③ Convolution Neural Networks and Different CNN Architectures with practical hands on.
- ④ Transfer Learning and pretrained SOTA model
- ⑤ Object Classification
- ⑥ Object Detection
- ⑦ Object Segmentation
- ⑧ Key point Detection / Pose Estimation
- ⑨ Facial Recognition
- ⑩ OCR - Optical Character Recognition
- ⑪ YOLO, Detectron2, Tensorflow, Pytorch
So on. ---
- ⑫ Real world CV project Implementation
- ⑬ Deployment

⑭ Latest Trends like vision
Transformer, multimodal and much
more - - -

⑮ object Tracking

⑯ GANs

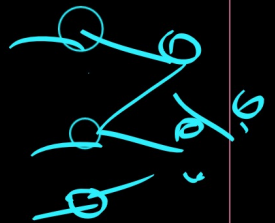
⑰ Self Driving car

⑱ Defusion model

prerequisite

① Python Programming → OOP

② Basic of DL → NN



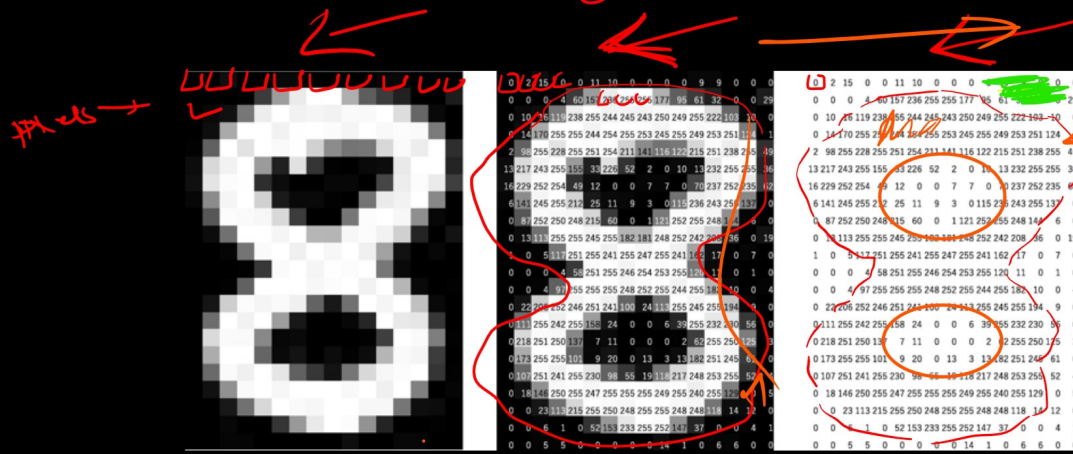
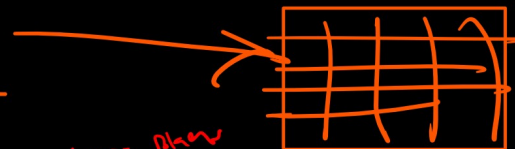
computer vision: DL → NN

→ ① ANN - Artificial Neural Networks → Tabular

CV → ② CNN - Convolutional Neural Networks → Image, Video

NLP → ③ RNN - Recurrent Neural Networks → Text, Audio

Feature Extraction

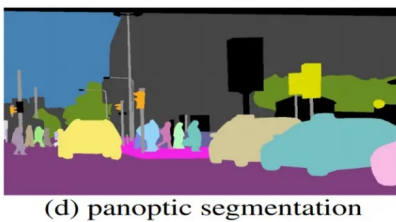
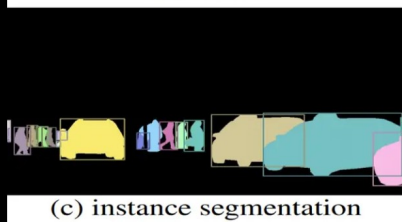
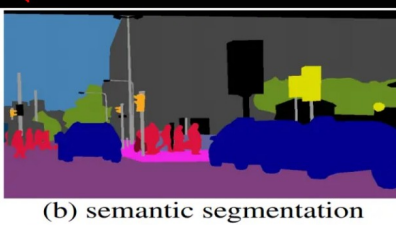


1-1



Classification	Classification + Localization	Object Detection	Instance Segmentation
CAT	CAT	CAT, DOG, DUCK	CAT, DOG, DUCK
Single object		Multiple objects	

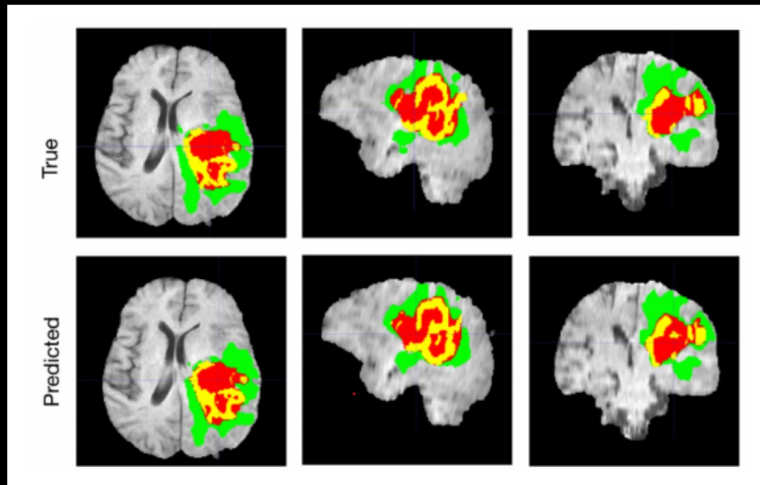
last



Self-Driver

Application

- ① self driving car
- ② facial Recognition
- ③ Detection system
- ④ AQ \rightarrow meta



challenges:

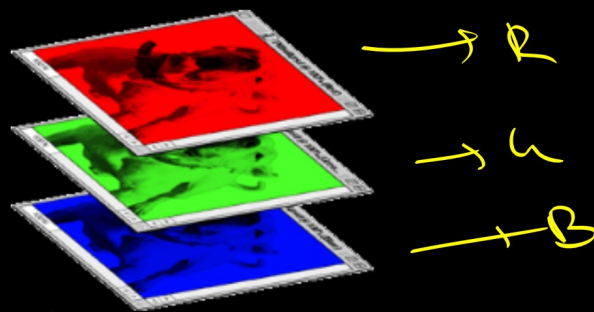
- ① Data Acquisition / Quality Data
- ② Hardware \rightarrow GPU,
AI00 \leftarrow
V100 \leftarrow
- ③ proper knowledge of the domain \leftarrow

A Image

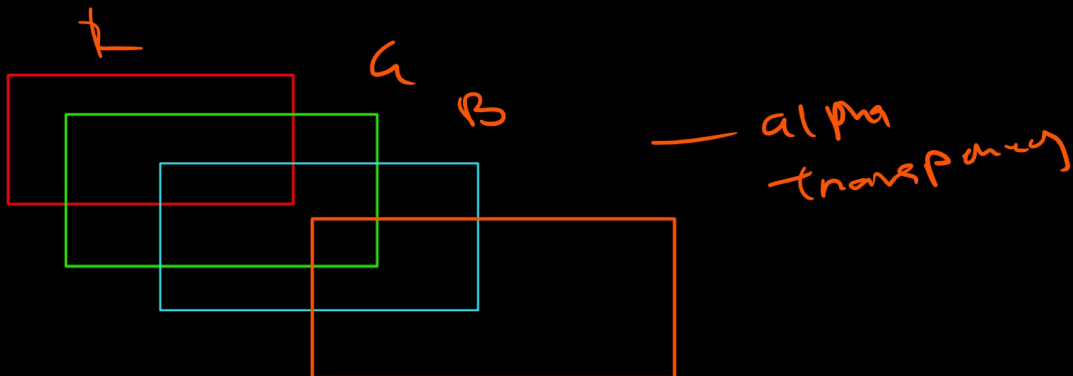
① Black white —



② Color Images — 3 channel — RGB



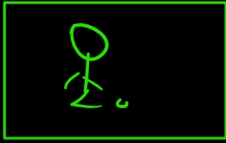
③ PNG → 4 channels
RGB, alpha



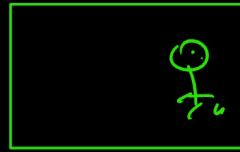
H. video data

Image frame — 30, 60,

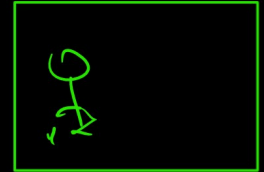
30, 60 + video



t_1



t_2



t_3

Video → Image frame