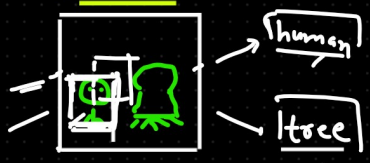
Classification → Image → ← Sunny | krish | Sudhesh | happy

Con_Base → NN ⇒ OIP

Customized CNN | Pretrain → Vgg, Resnet, inception ← Fine tuning

Classification → Drawback

Detect Obj

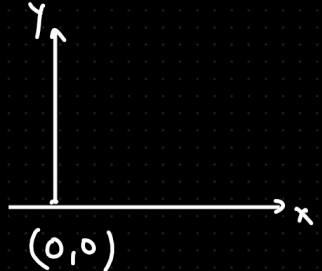


1. Extract
2. NN -

Dominate

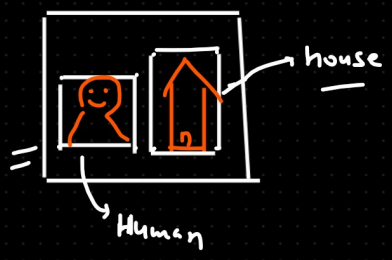
Object- localization ⇒ find out the position of the object inside the image

Image ⇒ Matrix



{Object Detection} → Classification + Localization

find | localize Diff obj in the image & classify those objects



Practical

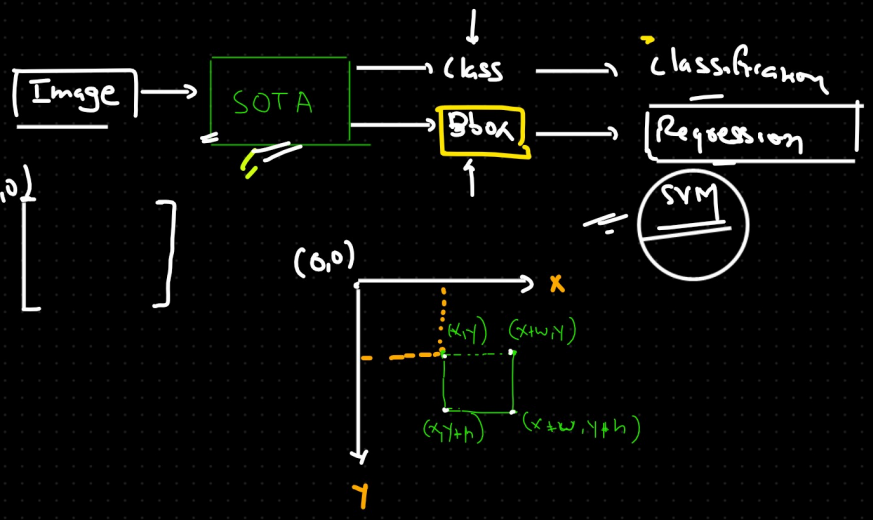
Naive approach of building an object Detection models

→ Sliding window approach

512×512

1×100

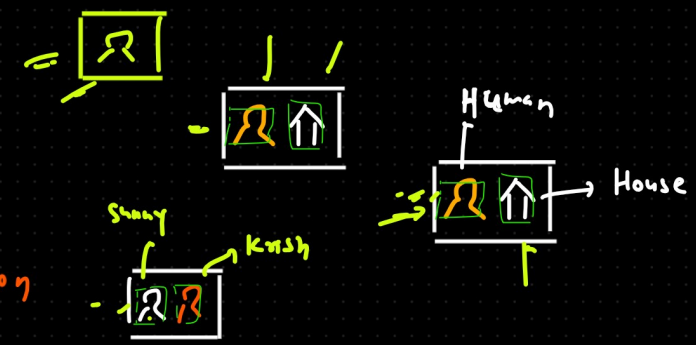
→ Variable box size
→ Computational cost
→ overlapping issue
→ slowest approach



SOTA

- YOLO
- SSD
- RCNN

1. Classification
2. Localization
3. Object Detection
4. Object Recognization



Training | Prediction ⇒ ~~TF OD1~~ TFOD2

~~Detection 1~~ Detection 2

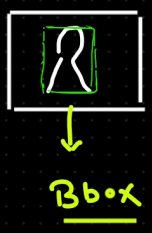
YOLO

1. RoI (Region Proposal)
2. Feature extraction or Network Prediction
3. Non-maximum Suppression (NMS)

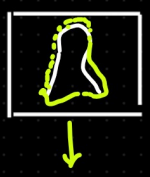
IoU , FPS , MAP

Segmentation ⇒ Pixel to Pixel mapping

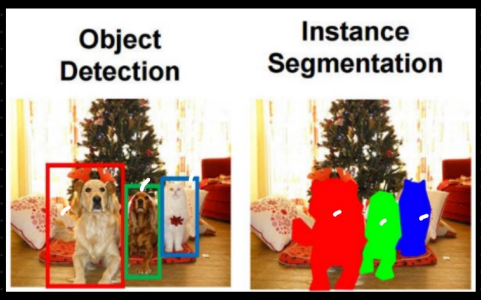
1. Semantic
2. Instance

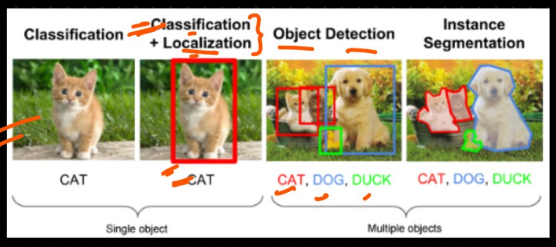


Bbox



masking





Mask RCNN ←

U-Net, V-net

Object tracking , OCR =

1. Face Recognition
2. traffic Surveillance System.
3. Helemr Detection
4. ANPR
5. Attance System,
6. Self driving car
7. Drowsiness Detection
8. Pose estimation

- classification
- object Detection
- Segmentation
- training
- OCR

GPU ⇒ Tensor

TPU

NVIDIA, AMD
↳ leading

Geforce GTX → 1650, 1660, 1660 Ti

Geforce RTX → 3060, 3070, 3080, 3090

Gaming laptop

NVIDIA tesla
NVIDIA Quadro
NVIDIA titan
NVIDIA NVS

- tesla A100
- tesla v100
- tesla T4
- tesla P100

Quadro RTX 4000, 5000, 6000, 8000

Quadro P2, P4, P5

- Respberry Pi
- NVIDIA Jetson Nano
  - Jeston Xavier
  - Jeston TX2

Google Coral