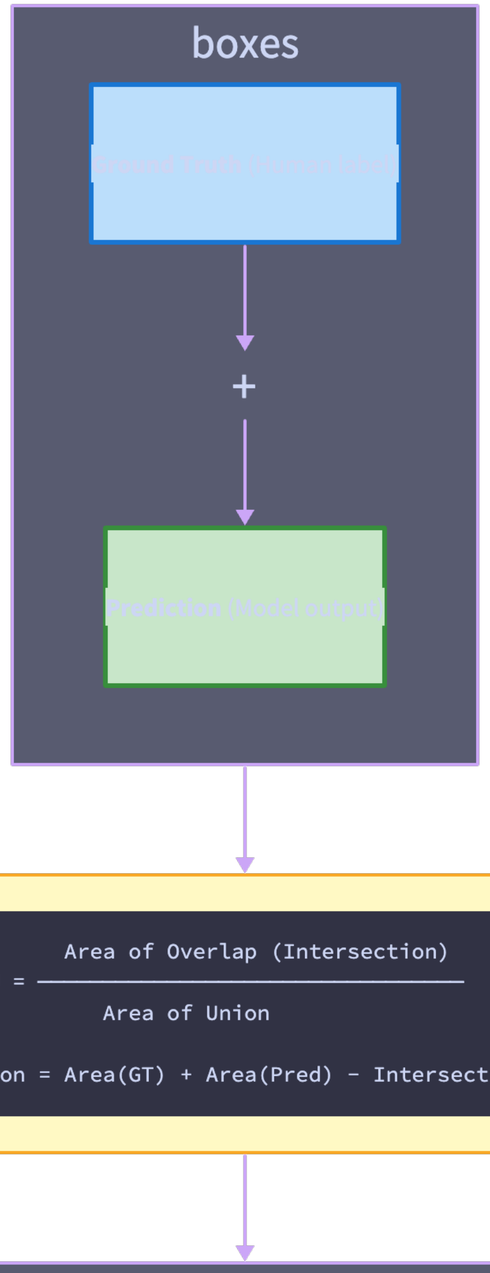
IoU = Intersection / Union



$$\text{IoU} = \frac{\text{Area of Overlap (Intersection)}}{\text{Area of Union}}$$

$$\text{Union} = \text{Area(GT)} + \text{Area(Pred)} - \text{Intersection}$$

examples

- **IoU = 1.0** Perfect overlap Boxes identical
- **IoU ≈ 0.7** Good detection Mostly overlapping
- **IoU = 0.5** Typical threshold for "correct"
- **IoU = 0.0** No overlap Wrong detection