



# YOLOVolleyball8:

Real Time Object Detection

Daniela Cruz Perez



# Background



Goal: To train a model that accurately detects ball movement in a play

Step 1: Data Collection and Cleaning

- USA vs Germany- Paris 2024 Qualification Tournament

Step 2: Bounding Box Generation

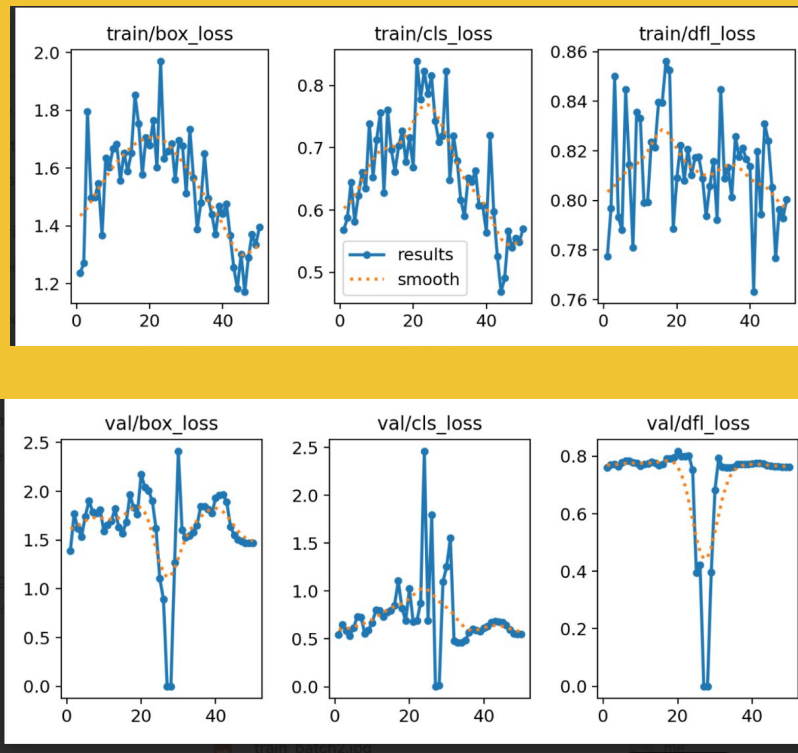
Step 3: Model Development

- 150 total epochs in 50 increments

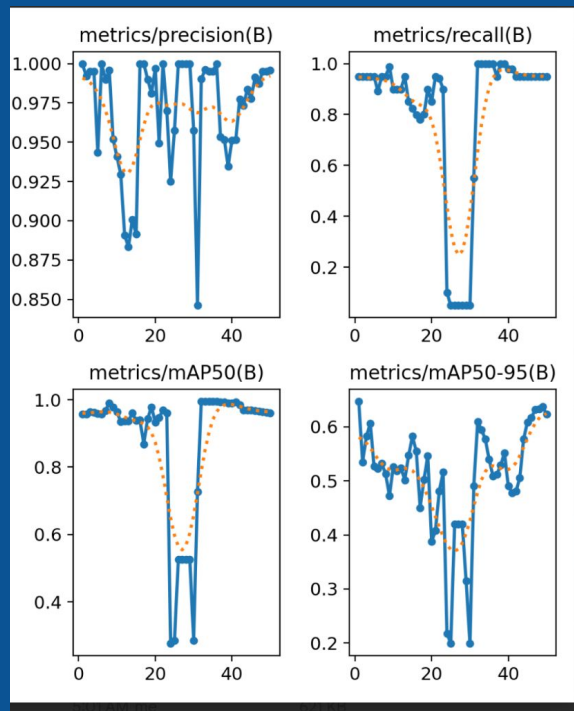


# Model Performance

- **Train loss:** loss functions used to train
  - Steady decrease suggest learning over time in locating boxes and classifying,
- **Valid loss:** loss functions not used for training
  - Sharp decreases indicates instability
  - Slight increases suggest less accuracy



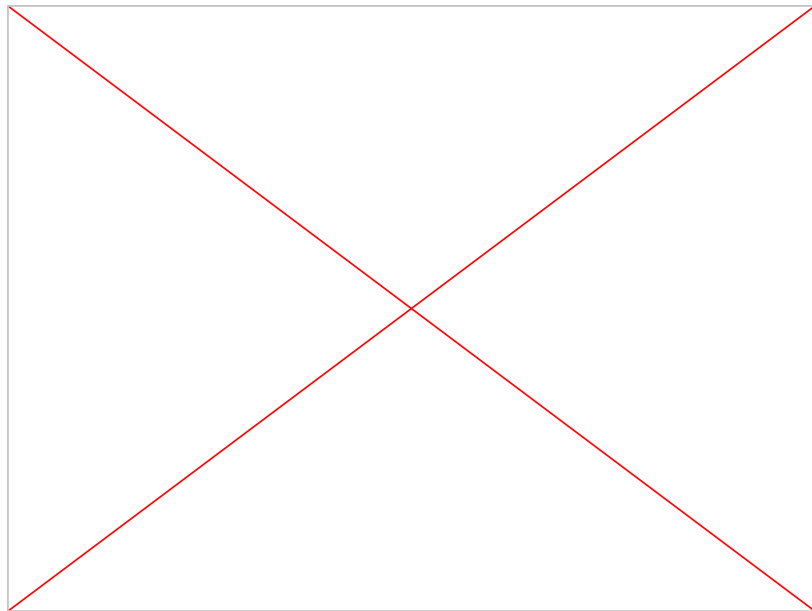
# Model Performance



- **Precision (P)**: accuracy of the detected objects
  - Relatively high but varies
- **Recall (R)**: model's ability to detect all instances of objects in the images.
  - High recall but sharp decline then recovers
- **mAP50**: a measure of the model's accuracy regarding accurate detections.
  - Unstable, recovery
- **mAP50-95**: model's performance across different levels of detection difficulty.
  - Fluctuates

# Model Deployment

Test: Apply model to a match



Questions