

YOLOvolleyball8:

Real Time Object Detection

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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

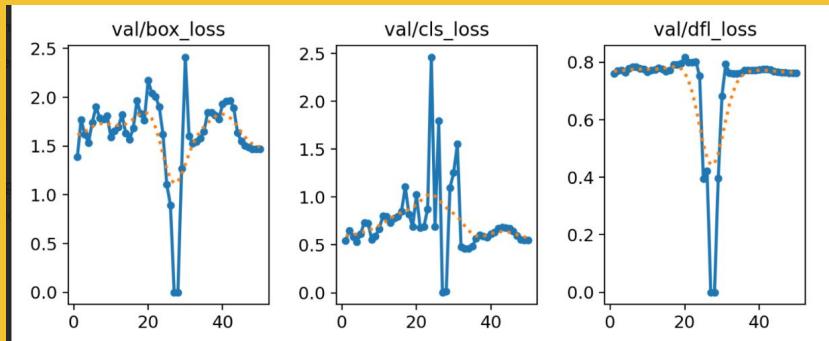
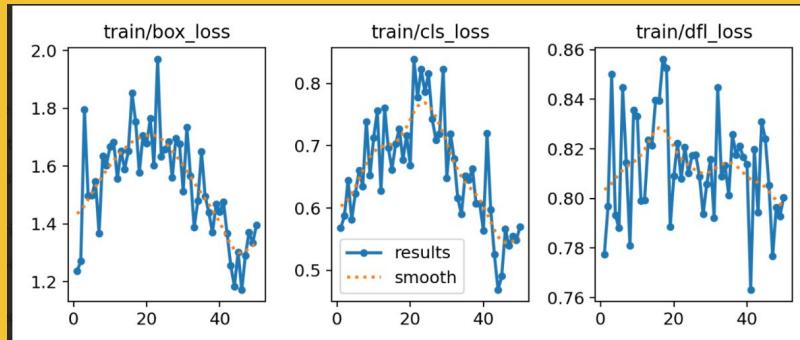
Step 3: Model Development

- 150 total epochs in 50 increments

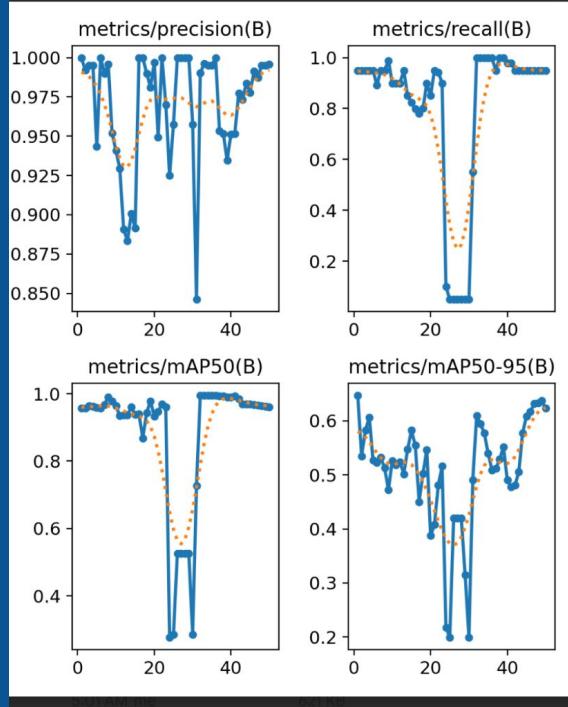


Model Performance

- **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



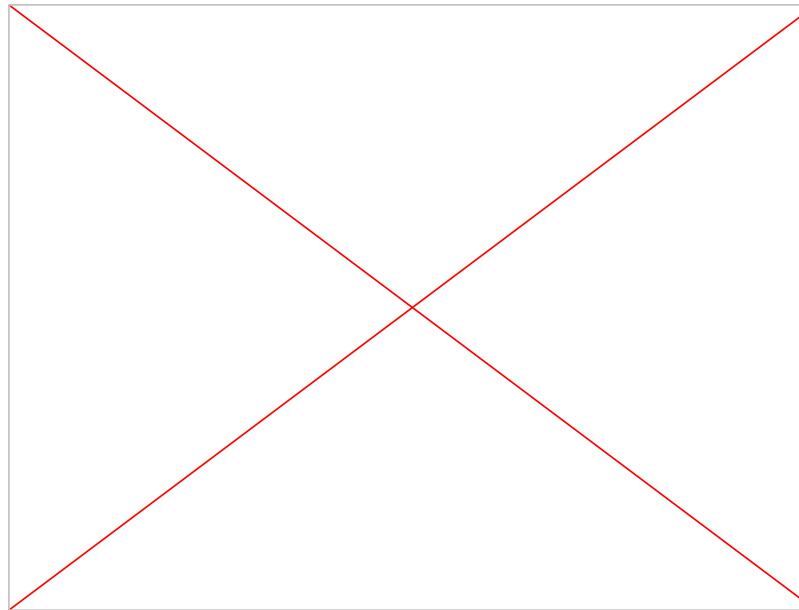
Model Performance



- **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