



VOLLEYBALL OUT OF BOUNDS DETECTOR

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INTRODUCTION

Nowadays, affect on the sport fairness is deeply associated with new technology. With the help of Machine Learning we have created a semi automatic 'out-of-bounds' detector to potentially help referees to officiate a volleyball match.

Our detector model relies on the computational analysis of the video and from single angle it can give pretty accurate results.

PRACTICAL USAGE

Software is built around user input, where it will output potential out of bounds video frames.

Firstly, software asks for a clip of a played point.

Secondly, user has to select court corners.

User gets potential out of bounds frames after video processing

VISUAL RESULTS

METHODS

Training YOLOv5 model with custom dataset from Roboflow interface. Data consists of 18k volleyball pictures.

Player detection with YOLO model yolo8ptx.

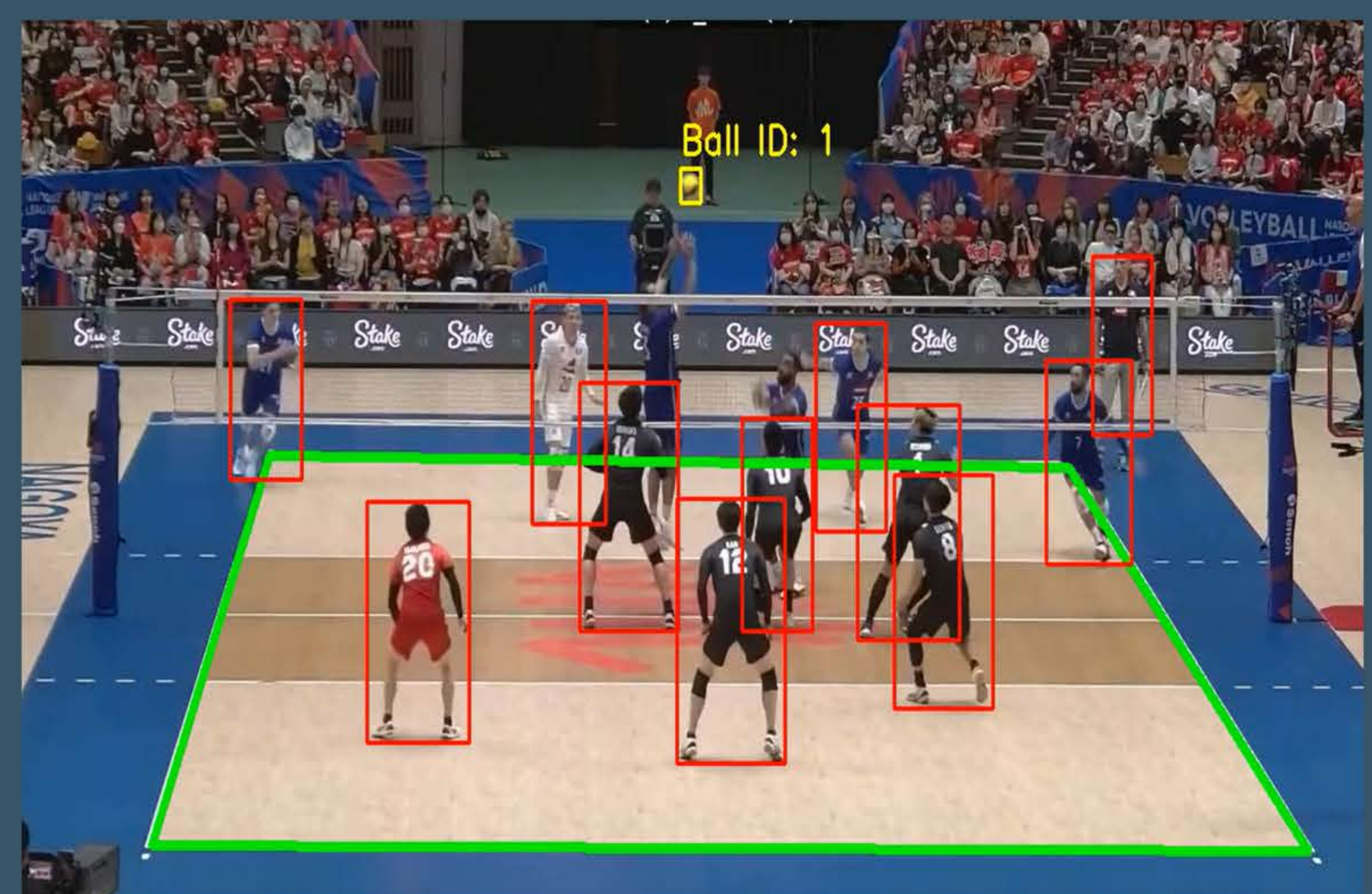
Court detection with user input using python OpenCV library. Which asks user to select corners of the court.

Code reviews all the frames of the video, applies detection algorithms and finally gives user potential out of bounds frames and processed video.

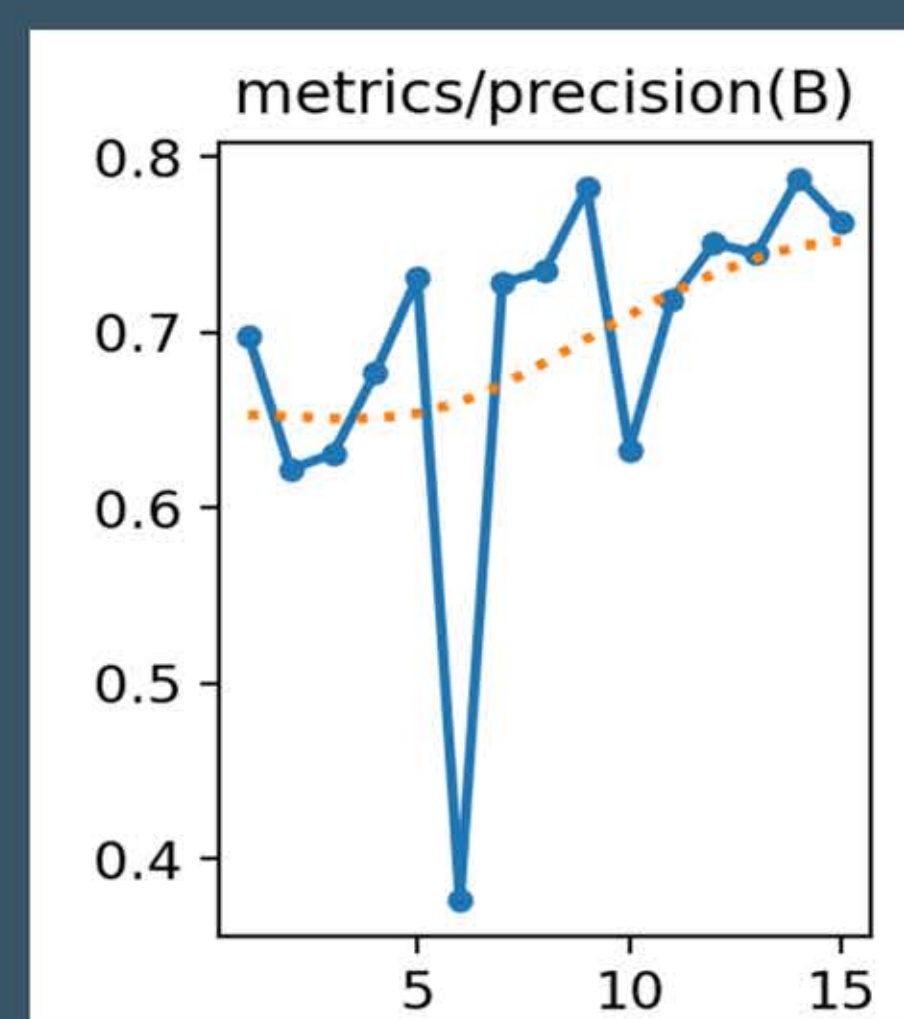
Video before processing



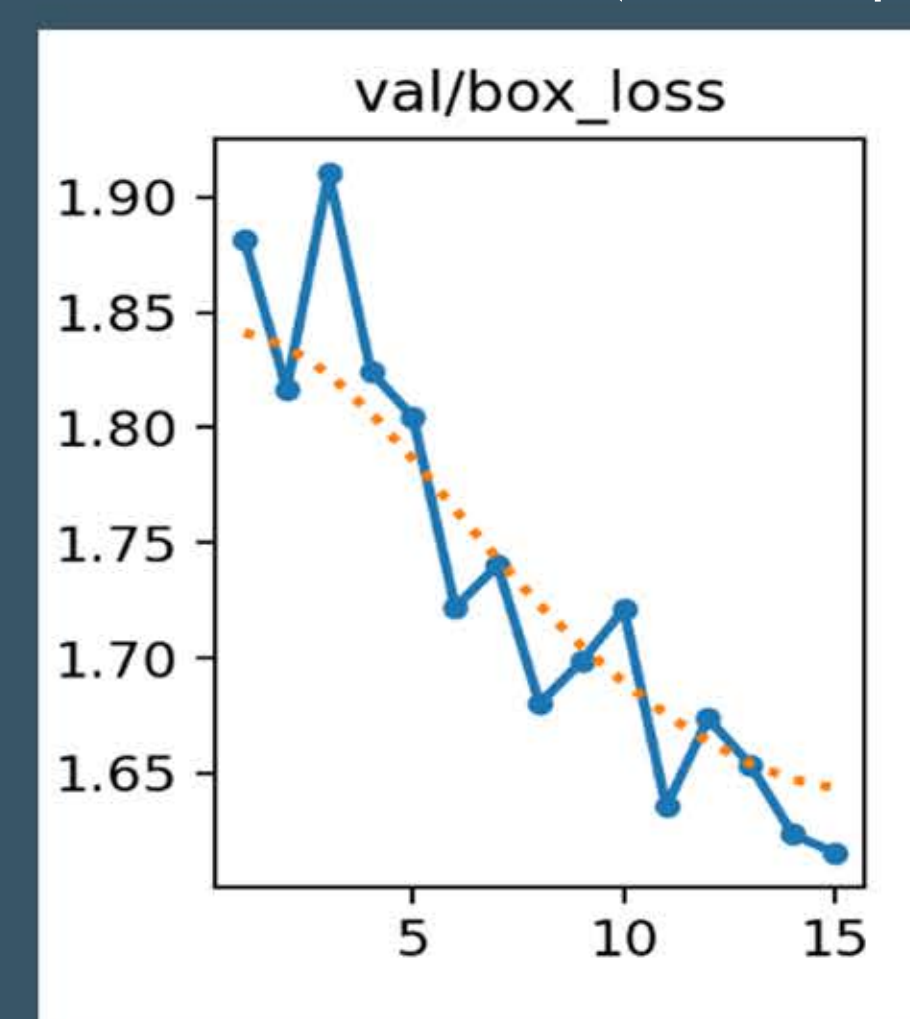
Video after processing



Box Accuracy (last 15 epochs)



Validation box_loss (last 15 epochs)



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