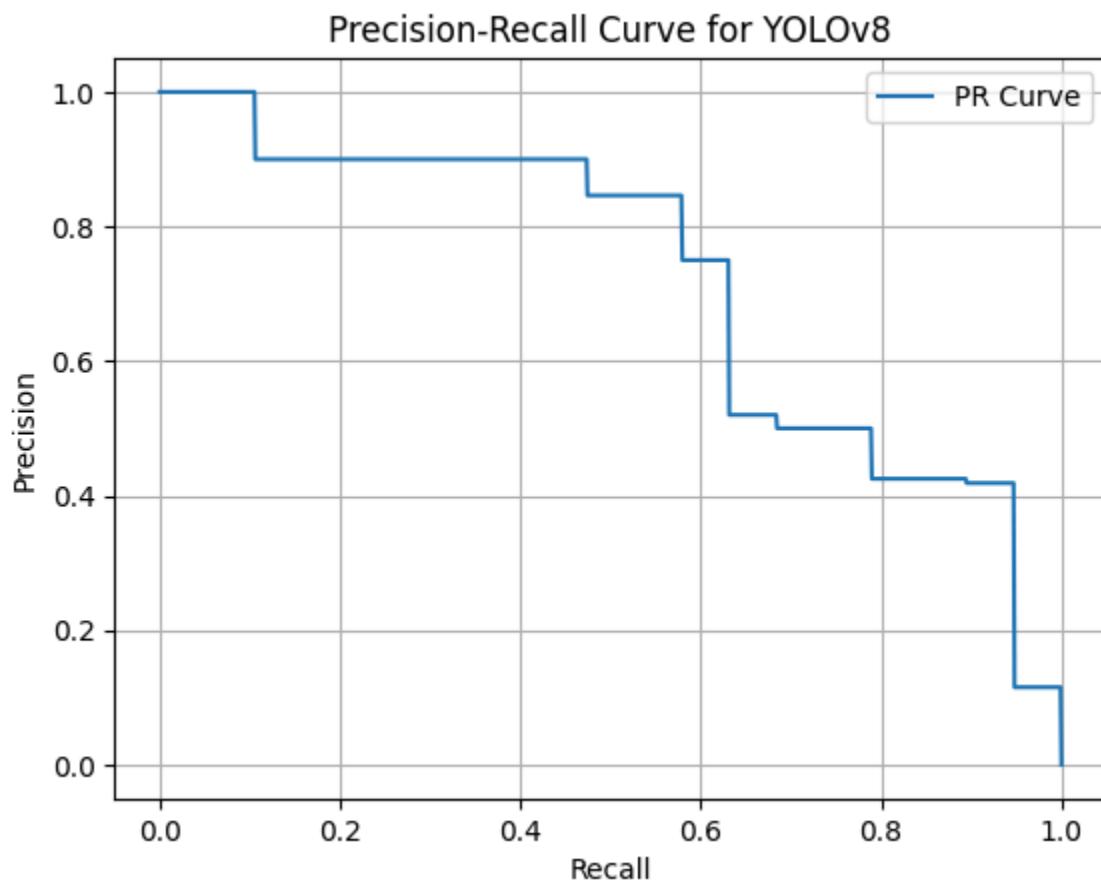
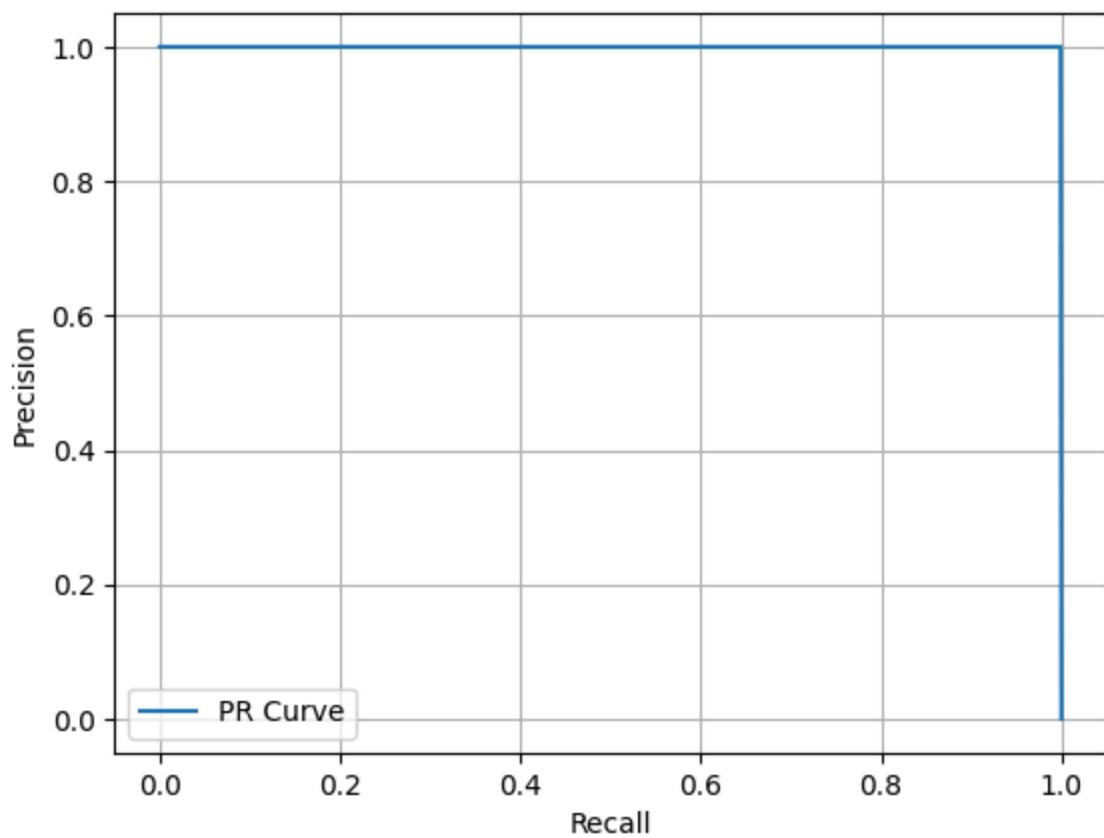


Player Tracking in Taekwondo Sports Videos

Performance comparison



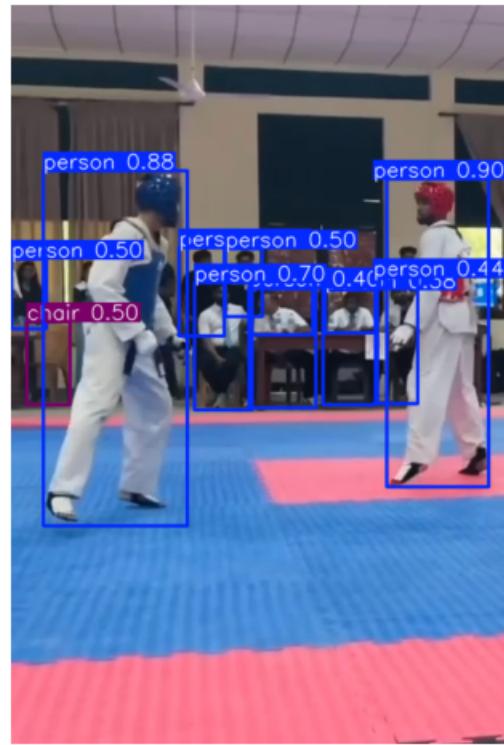
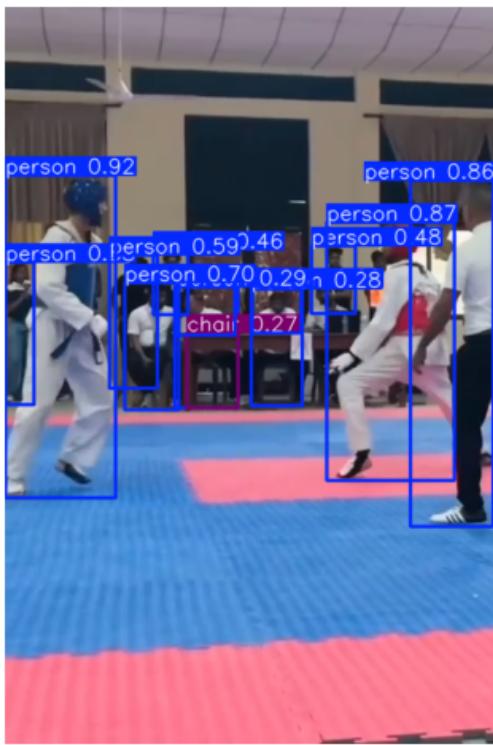
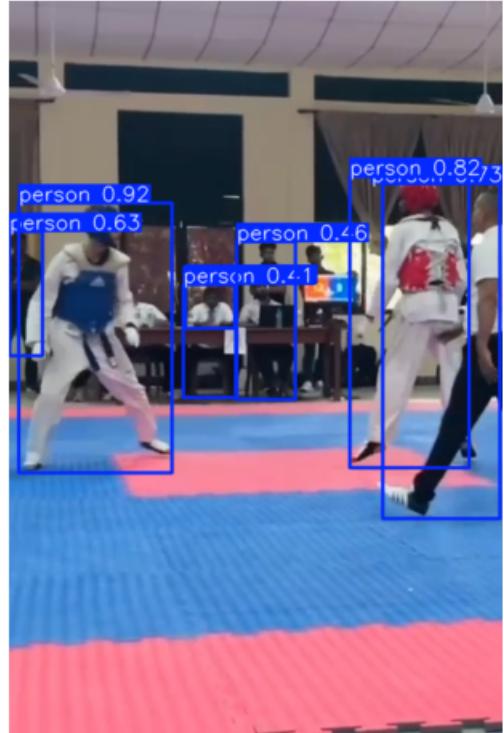
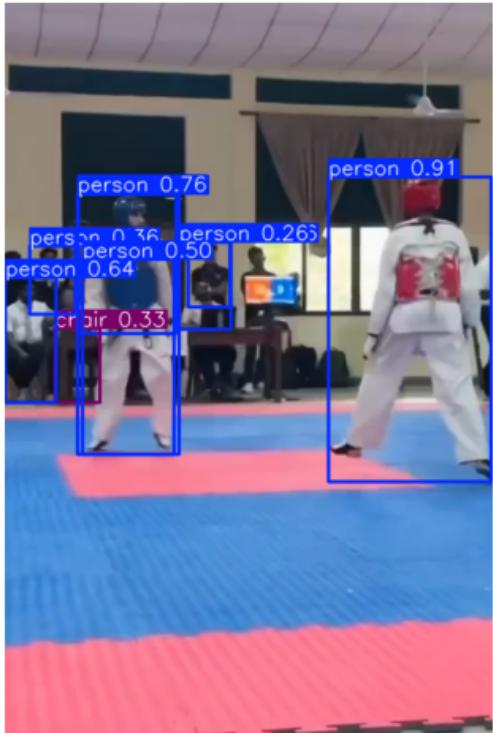
Precision-Recall Curve for custom model

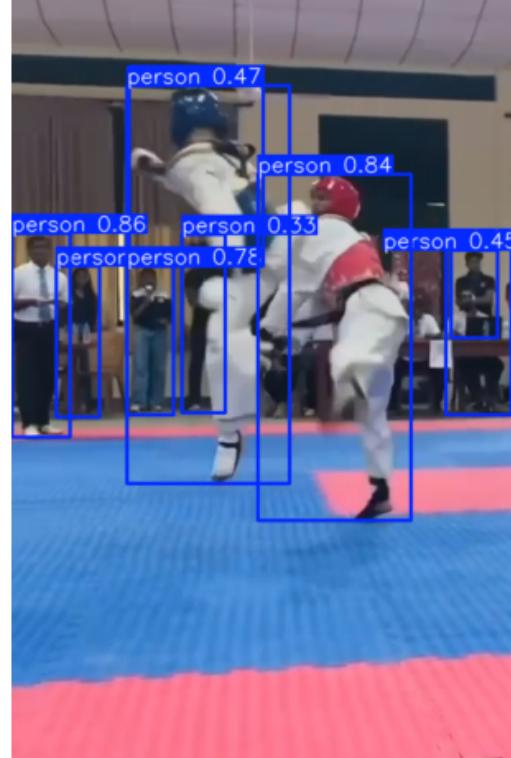
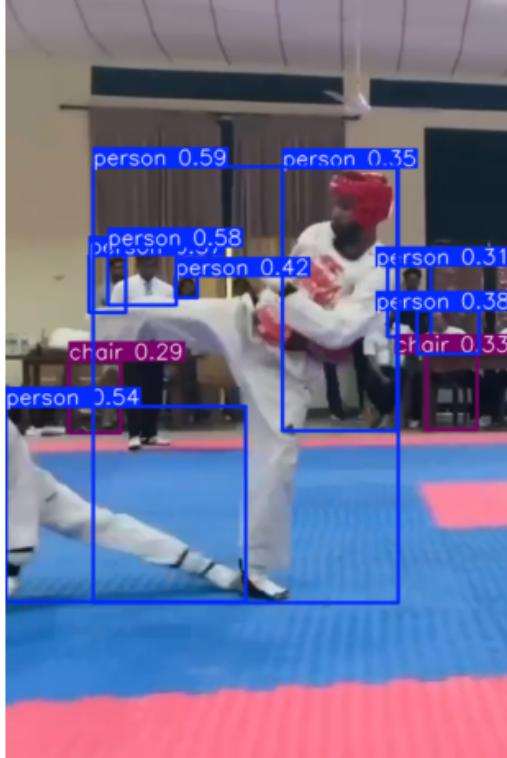


	precision	recall	mAP@0.5	mAP@0.5:0.95
0	0.996965	1.0	0.995	0.683257

	Precision	recall	mAP@0.5	mAP@0.5:0.95
YOLOv8	0.735347	0.585308	0.717053	0.508547
Custom model	0.996965	1	0.995	0.683257

Output for the test images from YOLOv8 model

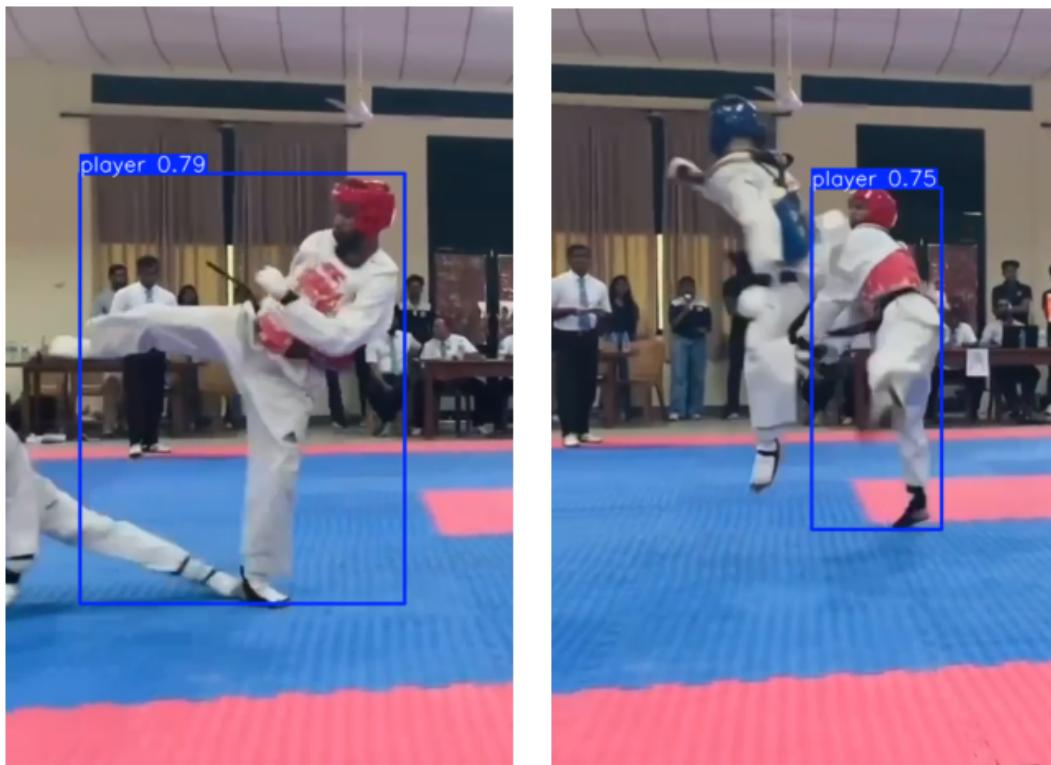




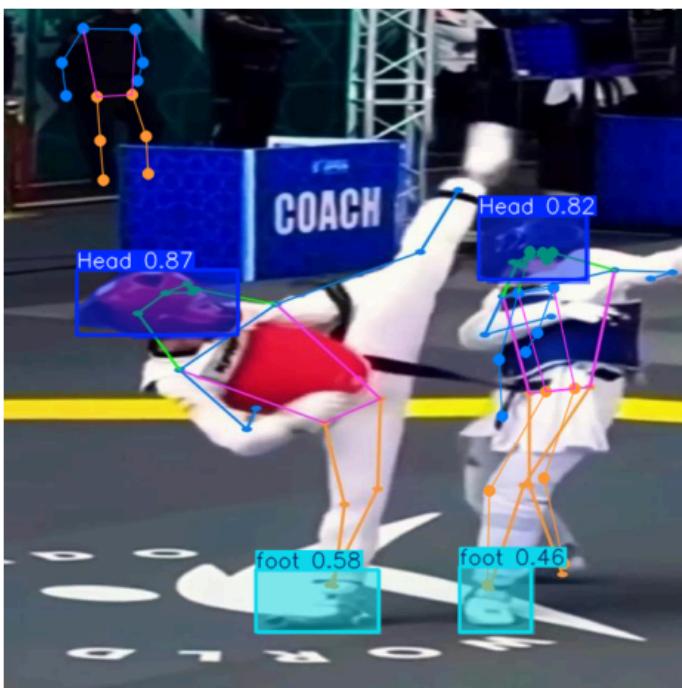
Output for the test images from custom model

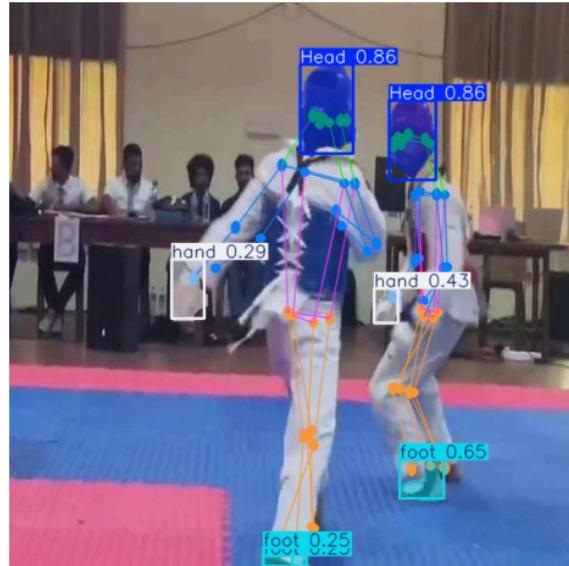
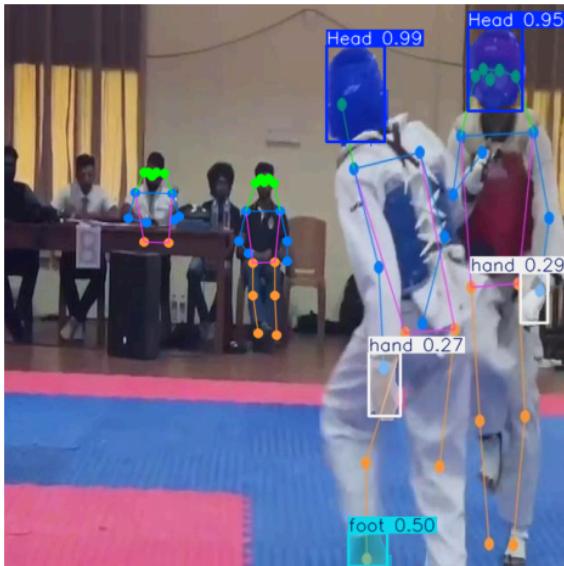
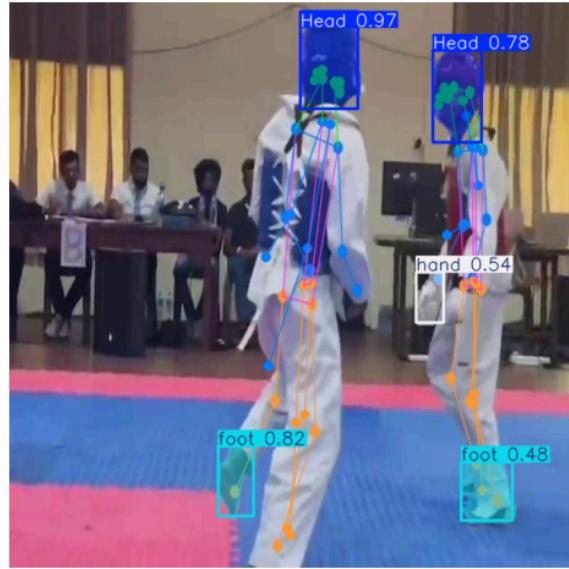
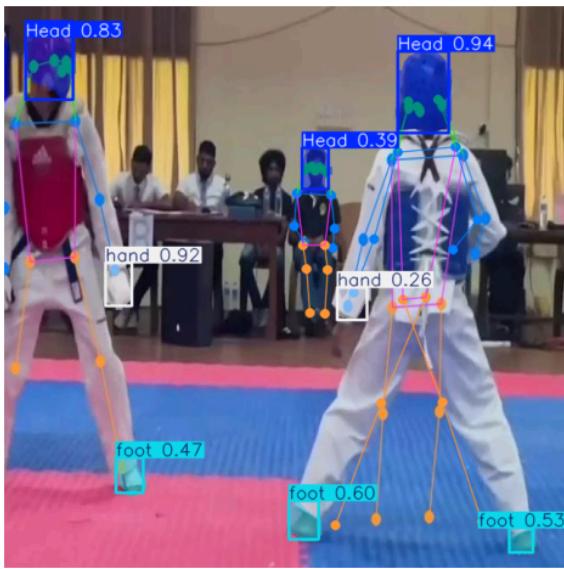


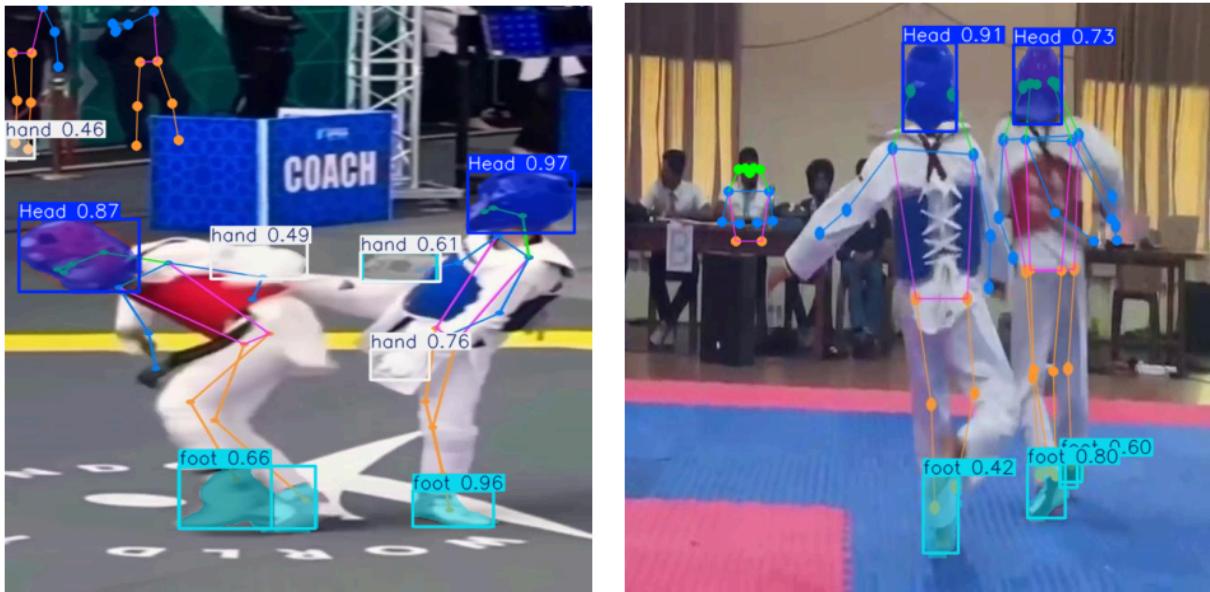




Key point identification







Discussion

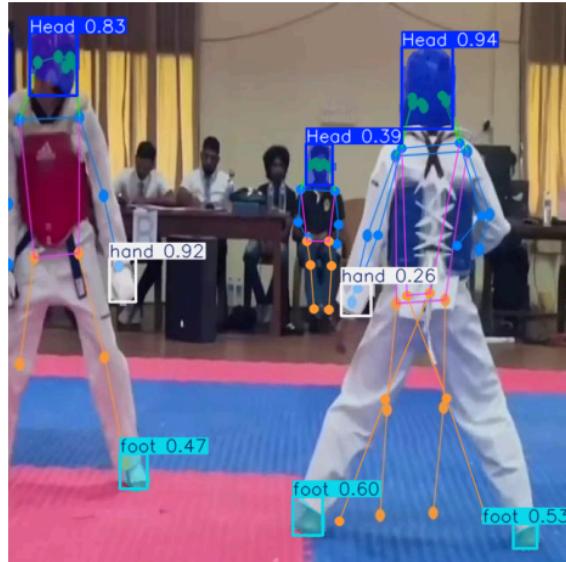
The player identification model developed after training the pre-trained YOLOv8 model is performing better than the state-of-art YOLOv8 model. Further it has the capability of filtering only players not the umpire or people from the audience.

Few limitations can be identified when analyzing the results for the test images.

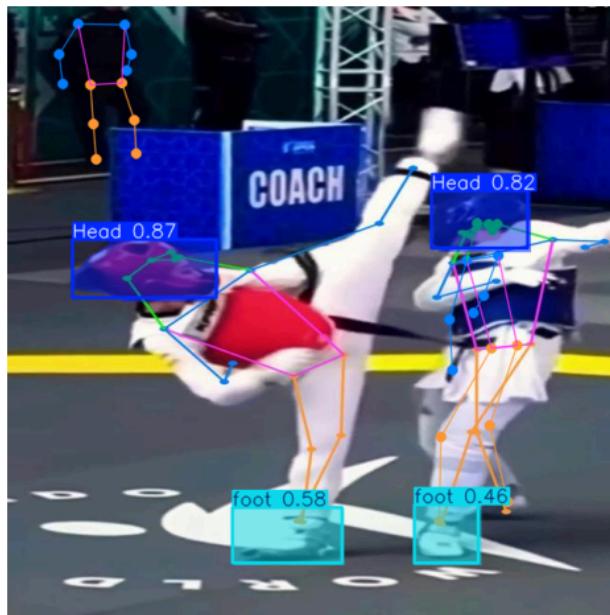
- If both players collide with each other sometimes the model cannot identify both players due to motion blur.



The key point detection model also has some limitations.



- It sometimes detects body parts of non players.



- This model also has the issue of identifying player key points due to motion blur.

As possible improvements, following improvements can be suggested.

- Identification of players separately
- Improvement of key point identification model and identification of player hits.