Automated Tracking of Players and Ball Movement in Football Video Footage

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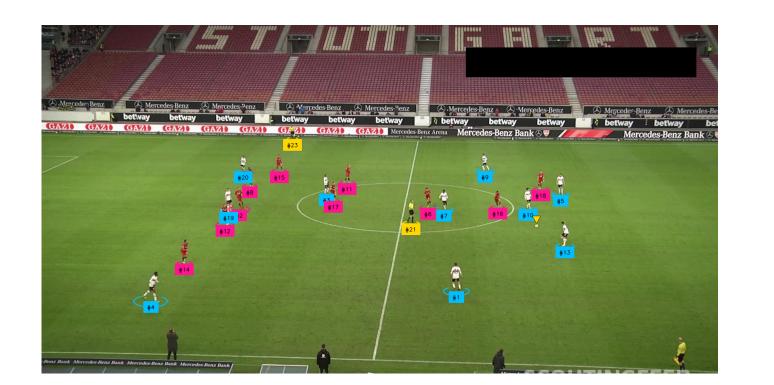
Main Features

- Model for players, referees, and goalkeepers detection.
- Dedicated model for ball detection and tracking with interpolation of missing detections.
- BoT-SORT for ball tracking and Bytetrack for others.
- Team assignment using color classification, SigLIP embeddings, and clustering.
- Projection of movements onto a 2D radar model of the football field using homography.
- Airborn ball trajectory correction on 2D radar and configuration for Real-time and Post-match analysis
- Analysis of player speeds, movement directions, ball possession, pressing intensity and generation of player heatmaps.

Architecture Overview

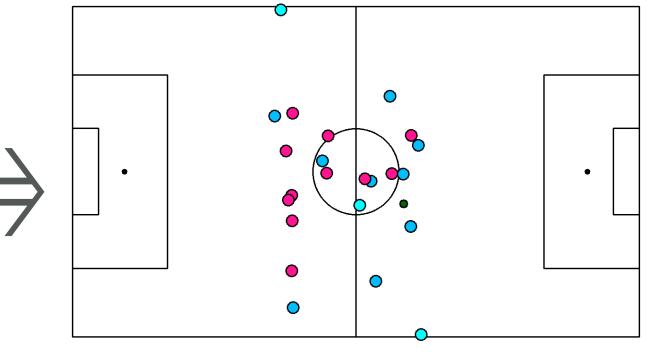


Input video



Object detection, tracking and team assigment

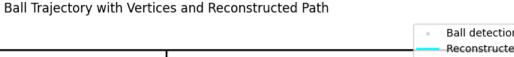




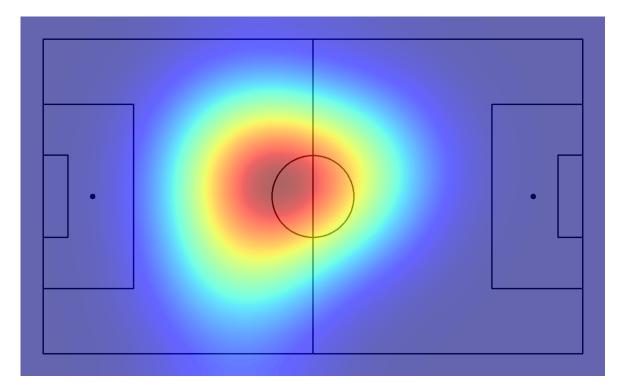
Projection of objects on 2D radar

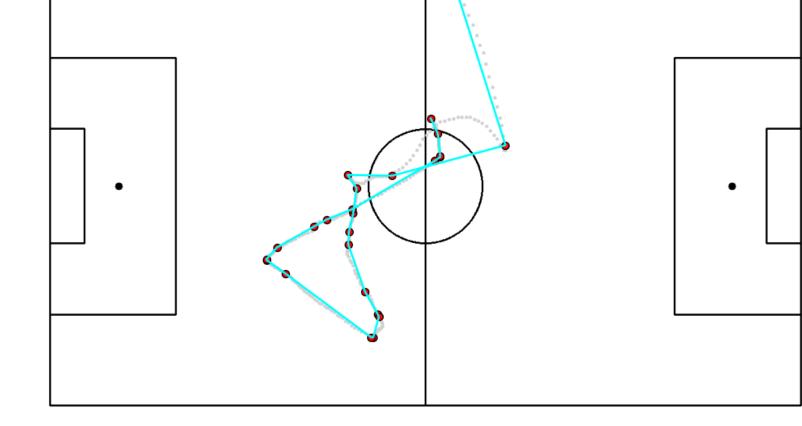
Keypoints detection, lines projection and homography

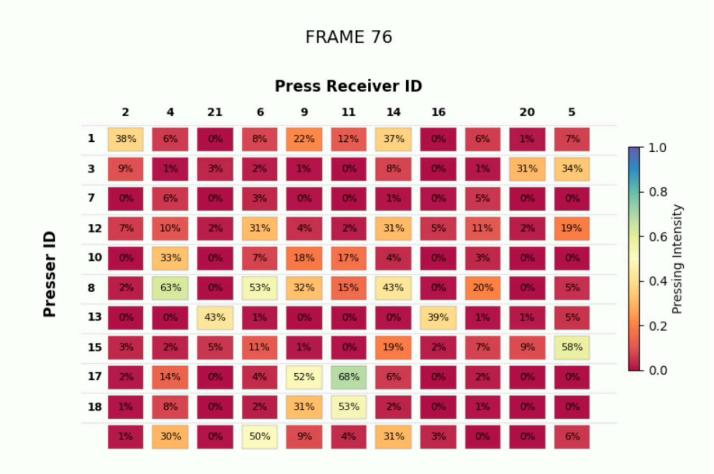
Real-time and Post-match Analysis



Vertices







Team activity heatmap

Correction of airborne ball trajectory

Pressing intensity: probability of pressure success per defender-attacker



