USING SPATIO TEMPORAL DATA TO QUANTITATIVELY ASSESS THE PERFORMANCE OF FOOTBALL PLAYERS

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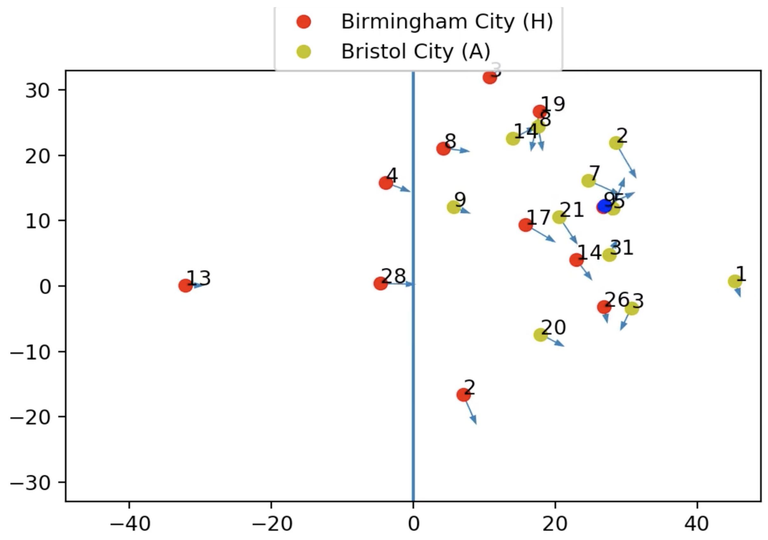
PROJECT INTRODUCTION

Presently, there is no robust model for the measurement of a football player's ability. This is due to the complexity associated with quantifying performance, but also due to the unreliable data caused by the human error associated with game event detection. Furthermore, extensive datasets are not freely available due to the exclusivity professional teams place on this data. For the purpose of this project, Bristol City FC have given access to spatio-temporal data recorded by ChryonHego's ZXY trackers for the current season.

CHYRONHEGO

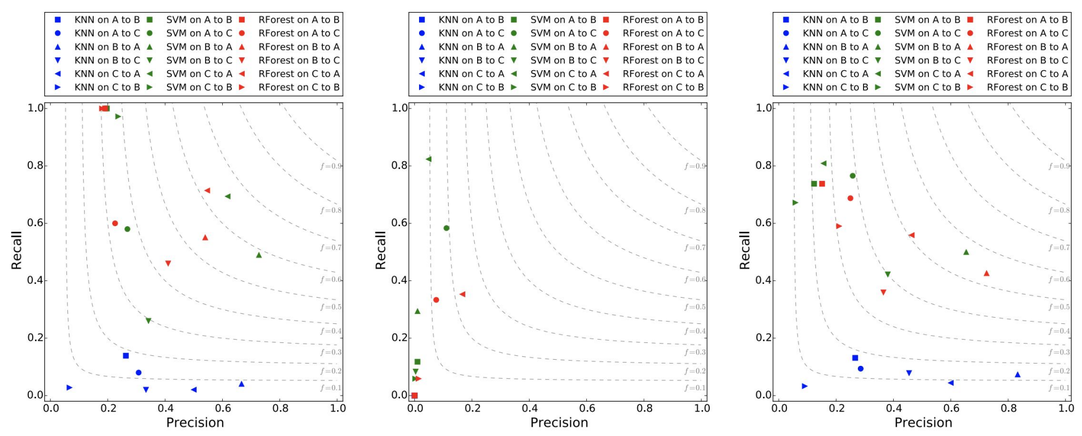
1. VISUALISATION

No video files accompany the tracking data, therefore a visual representation is necessary to make sense of gps coordinates. Assumptions have been made to calculate the direction of motion, speed and acceleration necessary for player area subdvision.



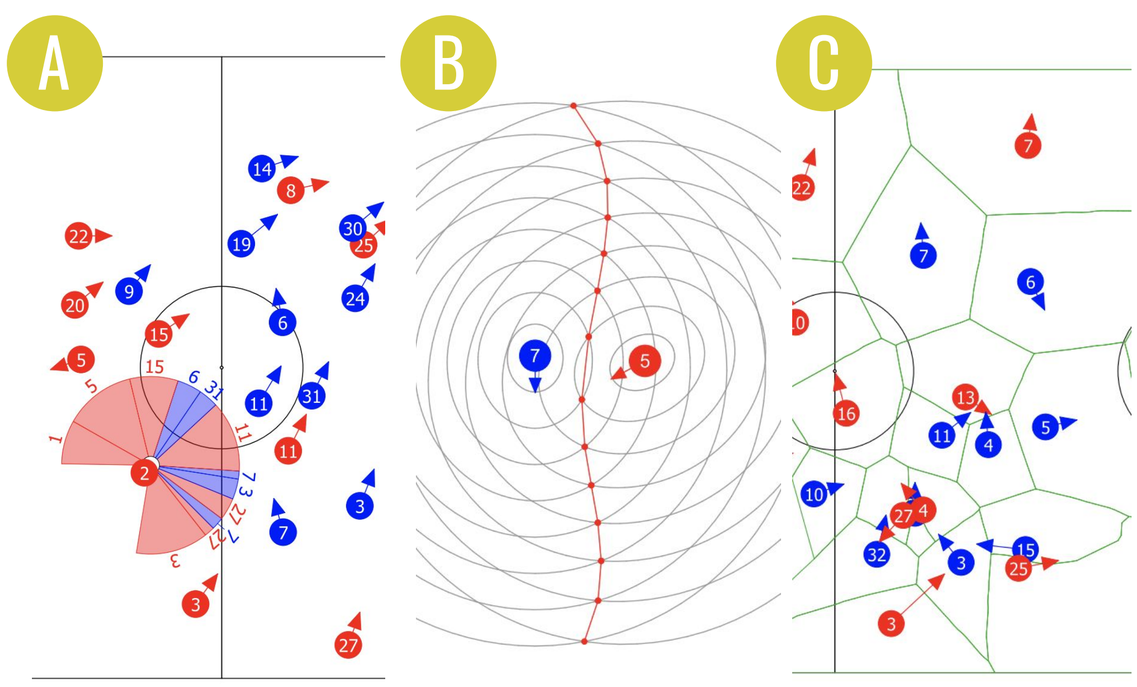
2. EVENT DETECTION

Machine learning techniques will be used to detect and characterise an event as: Pass, Reception, Shot on target, Clearance. KNN, SVM and RFOREST to classify, using data from a series of games. Accuracies will be compared with game visualisation and stats generated by OptaStats and provided by Bristol City FC.



3. ANALYSIS TOOLS

Using the Event data, analysis tools such as: Movement Models, Dominant Regions, Player Passing Networks and Formation detection; are being developed



4. PERFORMANCE MEASUREMENT

Given these tools, we can calculate offensive and defensive performance, based on the usefulness of passes, region domination percentage and other metrics discussed previously. Per player, we can reduce these assessments over a number of games, into a meaningful value. Rankings will be evaluated against trusted player ranking databases.

All useful findings from research will be presented to Bristol City FC coaches after the implementation is complete. Therefore the aim is to develop a reliable model that will benefit the club.