

Automated Commentaries for Simulated Soccer

Voronoi Diagram

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Voronoi Diagram

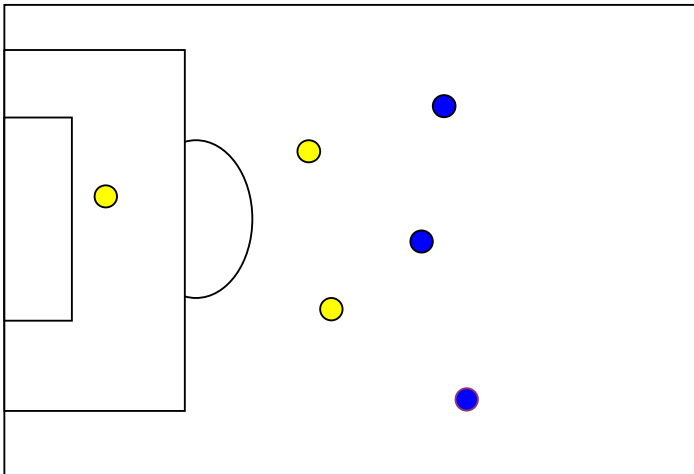
Introduction

The Voronoi diagram analyses the positions of the players and works out the plays and whether the team has a good chance to score in the next few time iterations. Rather than analysing the match and events which have occurred this is looking for events which may happen in the future just like human commentators.

The Voronoi uses the positions of players to identify what is going to occur and also the what type of players they are such as strikers or midfielders and try to predict to what is about to occur on the field.

The following have been implemented:

Counter Attack:

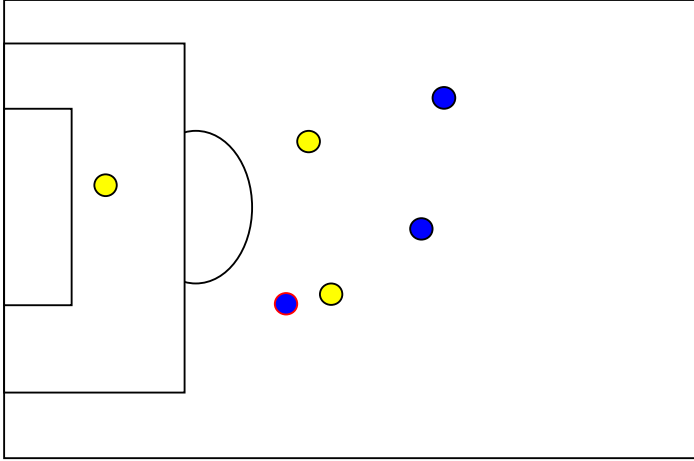


In the example above the blue team has the ball and is facing two defenders and a goalkeeper. In this case the Voronoi diagram can work out who has the ball and hence how many players of the opposite is in front of him and how many of his players are around.

If there are more attacking players than defending players then a counter attack/ attack chance is notified from the Voronoi diagram.

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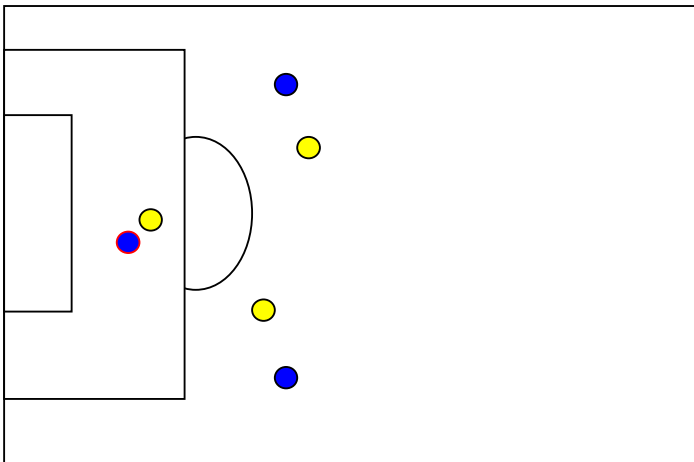
Beaten last Defender/ through on goal:



In the example above the blue team have the ball and player with the red ring has the ball. He has just beaten the yellow defender and is beyond the two yellow defenders in the x axis.

The Voronoi diagram identifies that there is one player between the attacker and the goal and hence it's a one on one chance and should be a great chance to score.

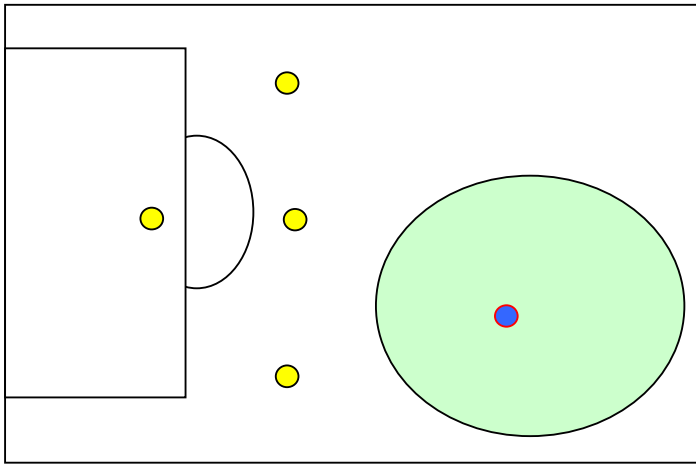
Open goal / Round the keeper:



In the example above the blue team have the ball and player with the red ring has the ball. He has just gone round the goal keeper
The Voronoi diagram identifies that there is one player between the attacker and the goal and hence it's a one on one chance and should be a great chance to score.

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Has space to run into (or time):

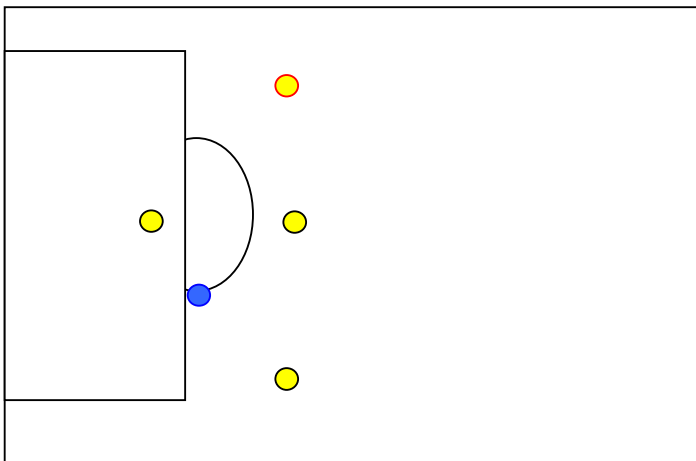


The player with the red circle has got the ball and he is faced with defenders and a goal keeper in front him. In this diagram we ignore other players of the same team as the player with the ball and concentrate on the opposite team.

The circle around the player represents the area which the player can run with the ball. This circle has a radius of 20 metres (20 yards). If no other player is in this distance and the player is in the attacking half then we can assume the player has time or space.

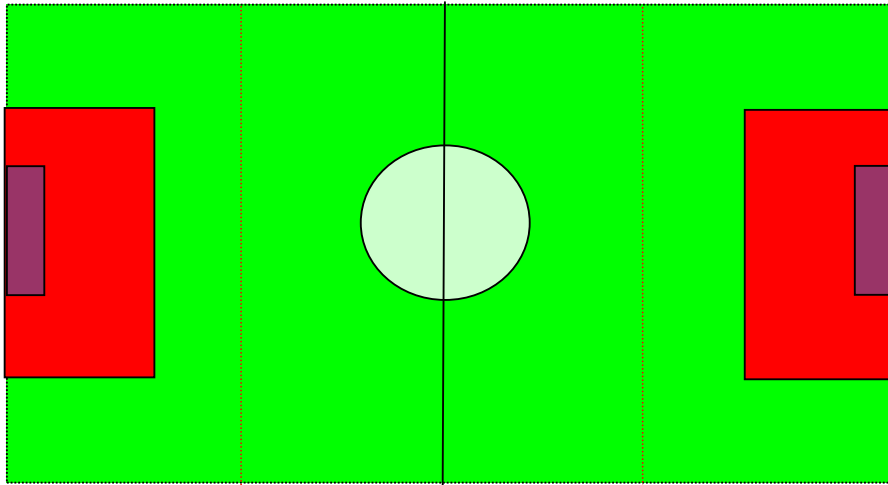
Chance has been wasted:

If the above sections are identified to have occurred and the voronoi diagram then check after 10 server minutes to identify whether the other team have the ball and the danger has been cleared. If this is case then this mentioned that the team wasted there chance. As below the yellow team has won the ball back is out of danger.



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Pitch Broken up into Areas:



The above diagram shows the usage of the Voronoi when a game is running. It only does the counter attack checks when in the green middle zones however once it passes the red lines it then does the rest:

Green Areas near centre:

- Counter Attack check

Towards Goal:

- Space to run into
- Last Defender

In Box:

- Open goal/round keeper