

NITStones-99

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1 Introduction

Since the offside rule was adopted in RoboCup-98, many teams without teamwork ability got offside penalty many times in their matches. Those teams who have dribble skill won, because most of other teams have not efficient defence strategy.

Our team focuses on a special teamwork strategy called line defence to against the offside rule. We use some basic teamwork abilities for implementing the line defence.

2 Team Development

Team Leader: Kouichi Nakagawa

Team Members:

Nobuhiro Ito

- Nagoya Institute of Technology
- Japan
- Research Associate

Kouichi Nakagawa

- Nagoya Institute of Technology
- Japan
- graduate student

3 Communication

When the ball is being close to a defender, the other defender should notify the defender that the ball is coming. It is also used by the player who is close to the ball to tell the other players the location of the ball. In addition, each player broadcast his position at regular intervals. This ability is helpful for passing the ball from a defender to a midfielder and catching the ball from the opponent offence.

4 Strategy

The offside rule makes the soccer agents have to consider new offensive strategies and new defensive strategies.

The line defence is an efficient defensive strategy which means that a group of defenders locate at a line (called offside-line) paralleled with the bottom line between the goal and the ball. we consider some ability to implement line defence.

Each defender has a home position. Usually, each defender keeps at his home position if the ball is not close to. The home position of each defender is changed dynamically depending on the position of the ball. We call the behavior of an agent to move back to its home position area as positioning. This ability is a necessity for the line defence.

Since the home positions of defenders are possibly overlaped, it is possible that a player comes into a collision with others. Moreover, a player chasing the ball may collide with the backbone of the player dribbling the ball. Hence, agents need an ability to avoid collision with others. This special behaviour is called avoiding.

Each defender should pay attention to the opponent players who are close to the offside-line, because it may break through the offside-line with the ball. That is the most dangerous situation. The defender should move to the cross point of the offside-line and the line connects one of the opponent player and the goal (see Fig.1). We call the behavior of the agent to move to that cross point as marking.

Without this ability of marking, the offside-line is possibly broken through by opponent players who have a dribble skill.

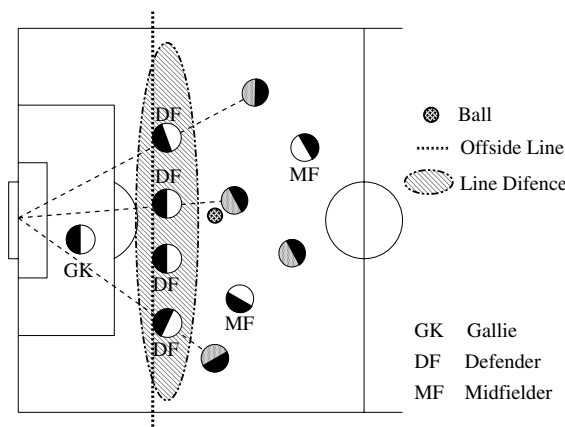


Fig. 1. Marking

The defence line varies with the position of the ball. When the ball is in the field of opponent side, the line is up. Otherwise, the line is down.

5 Conclusion

The line defence is efficient strategy against a team which using a simple pass strategy. But now, some teams have a practical dribble skill which is speedy and controllable. So our line defence strategy is not efficient against these teams. In this case, a sweeper is useful in real soccer.

We plan to vary a defence formation by modeling opponent team and using online learning.