OXSY 2015 Team Description

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Abstract. Oxsy team was founded in July 2002 for a graduation project of one student, Sebastian Marian, in the field of Multi-Agent Systems, at the Department of Computer Science of Lucian Blaga University (Sibiu - Romania). After graduation he continued the work on this project and so was born Oxsy team. As we started from scratch, our ideas, concepts and beliefs, was implemented year by year and today, we are happy to see that we are on the right way, as our team was growing in these years, more than we expected from the beginning. If we'll qualify to the competition, this year we'll reach at the 13th consecutive participation, in RoboCup Soccer Simulation League.

1   Introduction

In July 2003 at RoboCup competition, which was held in Padua - Italy, we won the first round and for us it was a good surprise for first year of participation. Then, in the next year, we participated in Lisboa - Portugal for the second time, and again we obtained a good result (the 11th place). In 2005 in Osaka – Japan, we participated for the third time and finally we entered in the first 8 teams of soccer simulation league, as we won (the 8th place). In 2006 the competition was held in Bremen – Germany and we won (the 7th place). In 2007 we went to Atlanta – Georgia (U.S.A), where we obtained (the 5th place), the same result which we achieved in 2008 in Suzhou – China. Finally, in 2009 in Graz, we entered in the first 3 teams in the soccer simulation league, as we won (the 3rd place), the same result which we achieved in 2010 in Singapore. In 2011 we came back from Istanbul - Turkey with 4th place. In 2012 we were in Mexico City, where we had a bad experience as we made some major changes in our defensive system, and also many others overall our team strategy, changes which was not very well balanced at that time, with all others characteristics of our team, as we didn't qualified for finals, from the second round groups. In 2013 we came back in top, as we won the 6th place, in Eindhoven – Netherlands. Last year the competition was held in Joao Pessoa – Brazil, and we entered on the stage for the third time in our participation history, as we won again the 3rd place. This year the competition will be held in Hefei - China. As we already have a very good experience in 2D Soccer Simulation league, we hope that our new ideas and improvements will be reflected in the competition where we will also test other tactical elements developed.

2   Pressing in the attacking zone

In order to get the best results and, in any case, to make our team as strong as possible, we must take care of every little detail, even those things that may look marginal. In fact, when the technical ability of two teams is more or less on the same level, it is the details that often make the differences.

This year, we continued to prepare our team defense phase with careful attention of this tactical action named pressing. In fact, pressing is a collective tactical action, carried out by more than one player, and performed in situations of non-possession. We should make a distinction between putting a player under pressure and pressing a player. Putting a player under pressure is an individual action, carried out in order to take away playing space and time from the opponent in possession. Instead, pressing means that a number of players are cooperating simultaneously so as to reach a common aim. The purpose of pressing is to close up the spaces and playing time for the team that is in possession, making it difficult for them to develop their attacking moves and easier for us to regain the ball. We also classified the types of pressing, depending to the part of the field where these collective actions are applied in the most systematic way (Fig. 1.):

- ultra-offensive pressing;
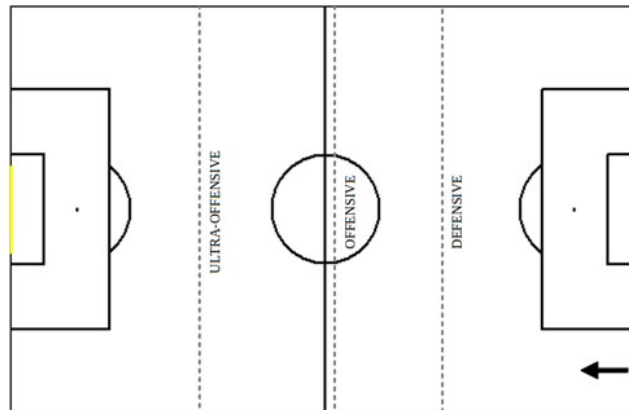- offensive pressing;
- defensive pressing.

Fig. 1. Classification of the pressing types

In the above image, we just have seen that applying pressing in the attacking zone means waiting for the opponents to arrive up to certain part of the field before beginning to put the prepared strategy into real effect. We have to decide whether pressing in the attacking zone should be carried out all through the match or only in certain cases. In the first case, it is the coach's job which must determine this strategy depending of the opponent we are facing, while in the second the team is merely aligning its tactical behavior to certain accidental factors (we are losing, the team is in numerical superiority and wants to win, there is not much time left and we have to unlock the result and so on), which will condition and modify our original strategy. Before to make a closer analysis of the tactics and the characteristics of pressing in the attacking zone, we must make an elementary point: there are, of course, enormous differences between offensive and defensive pressing.

Looking at the tactical behavior of soccer teams, in the attacking zone, one of the things we will always notice is the fairly static and clear cut placement of the defenders, who tend to move along pre-established lines. In the defense zone, on the contrary, the strikers try to move along the whole front with the mid fielders inserting themselves as well. This creates a situation of great dynamism, which makes it difficult for those who are trying to defend to establish precise points of reference. This is taking place for obvious tactical reasons: the defense section is usually playing in numerical superiority over the opposition's attacking group, so that all the opponents need to do is to pass the ball correctly in order to gain depth and field. Secondly, all the activity made by opponents that takes place in the defense zone, would not be feasible in attacking zone because of the risks they would be running if they lost possession (and in such an event the opponent's team would have great difficulty in getting back into order).

All this goes to show us that it is easier to give precise points of reference to be 'attacked' in the offense, rather than in the defense zone. Naturally this advantage is offset by the fact that if we want to use pressing in the attacking zone, then the ball must be in that part of the field; and that, in turn, does not depend wholly on our ability to keep the team tight and compact with the defense line drawn up in or around the mid field line. If the adversaries attempt to override the mid fielders by continuous and systematic use of long passes, that will complicate our application of offensive pressing. Beside this, however, in order to use good ultra-offensive pressing, the team must be good at the rebound so that it can maintain depth, and, above all, the players must be able to handle negative transition (the passage from a situation of possession to the defense phase) so that they can immediately stop their adversaries attempts to organize their plays.

We have already seen that more than doubling up on the player in possession, (who, in any case, on account of the zone in which he is working, will have to reduce the range of plays open to him) the important thing for the team is the crispness of its tempo as it goes into pressure. When our player goes into pressure on the player in possession, his team mates must close in on the opponent's players to whom the ball could be passed (supporting players that are near or far away and any other players that might be useful). One way of hiding any possible problems there might be in its tempo is to make sure the team can defend itself using all its players and with the

maximum aggressiveness in all the zones of the field. Putting our opponents under pressure means, in fact, slowing down the general tempo of their plays, on both an individual and a collective level, which must be in our advantage in that we will have more time for our shifting moves and we will be able to get back into our places before it will be too late. To sum up we can say that the most important factors underlying good offensive pressing are:

- the team's ability to work together;
- speed during negative transition and in adapting to the various tactical situation on the field;
- aggressiveness.

From a strategic point of view, what we need in order to organize prompt and remunerative pressing in the attacking zone is to 'shape' our placement in relation to the tactical system being used by our opponents. This is the point where our coach must be involved.
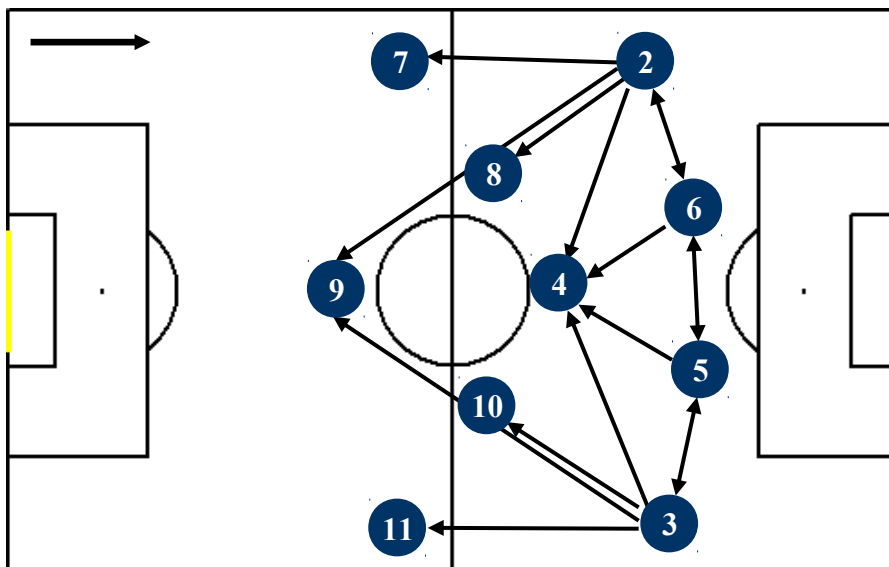

Fig. 2. When we are facing an adversary lined up with a 4-4-3, the best way to press in the attacking zone will be to close off the players passing lines as shown above.

The side backs (essential points of reference on whom the center players will be depending to keep ball on the move) and the center mid fielder (all important apex in the team's building up plays) will be the players who we will have to be most careful about. Apart from identifying which opponent to press, our players will have to be clear about which passing lines to close off in order to make their opponent's building up maneuvers as difficult as possible.

For example, with the left side back number 2 in possession, the opposing players to be shut off are:

- the supporting center back number 6;
- the mid fielders waiting to take the ball on the inside number 8 and 4;
- the right wing number 7 on the sideline;
- the center forward number 9, who is acting as an advanced point of reference in the center.

As far as defensive pressing is concerned, and in order to create the density of players that will allow us to double up on opposing players, it is important to know what type of movements the strikers will carry out to free themselves of marking, and the direction in which the mid fielders are going to insert themselves. When we intend to use pressing in the attacking zone it becomes of absolutely fundamental importance to define our adversary's points of reference during the build up phase and the passing lines we will have to cover.

To return to the preceding example, in which we were having a look at a team lined up with the 4-3-3, formation that is most used by teams in 2d soccer simulation: here is a proposal for good pressing in the attacking zone.

Remember that is easier to carry out pressing on the sidelines. It is important, therefore, that we 'encourage' our opponents to pass the ball in such a way that it finishes up with the side backs. Once the ball has come into their possession, we must put them under individual pressure.

Our player, whose job is to close off this point of reference, must make his move as soon as he see that the ball is on the point of arriving to his direct opponents. He must not wait until his adversary gain the possession of the ball, but must go into pressure before this happens. At the same time, the team must be able to close off the passing lines shown in Fig. 2 (passing along the sidelines to the wing, short pass to cut to the side mid fielder, diagonal pass to center mid fielder, dump on the center defender, long pass to the center forward).

Linked to all this, the coach's job will be to find the best formula (or tactical lineup) to make sure that the team can carry out the closing up plays that we have already illustrated, as quickly as possible. Speaking practically, the coach must try to find a lineup, that place his players in such a way that they will be able to find the opponent's point of view in a natural way without having to carry out movements (or shifts) that will be too long – that, of course, would complicate the work of the individuals and as a consequence the operations of the whole team.

3 Future work

For the next future, we'll involve our coach in many others issues, where the team really needs his help. Even if the free form messages, are limited by count and periods of sending, the power of the coach remain very important, as he can receive free noises information. In this way, he can analyze many important aspects of the games and if he'll deliberates based on these information, he can give valuable advices to his own team.

We must accept that right now, many teams involved in this competition, adapt theirs strategy before the game is started instead of while it running. A team will be more powerful, when it can adapt correctly his strategy depending of the opponent behaviors and not by the opponent's name, and also during the game and not only before it starts. In this way, we tried to adapt our team to some unexpected situations, which are generated by different playing style of our opponents. In the real soccer, the role of the coach during the game is very important, and this is not only because of the players that he's changing, but because of many good advices that he gives to his team. In the same way we must think more and more to the power of the coach and how we can use it in our simulator.

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