

## Analyzer software

The analyzer software for 2d simulation league is designed graphically in java. This software processes and extracts useful information from the outcome loges of 2d simulation games that explained in the following.

For example it can specify players and ball movement continuously in demanding cycles, Fig1. or presenting the ball path during the time that each team owns the ball one after the other.

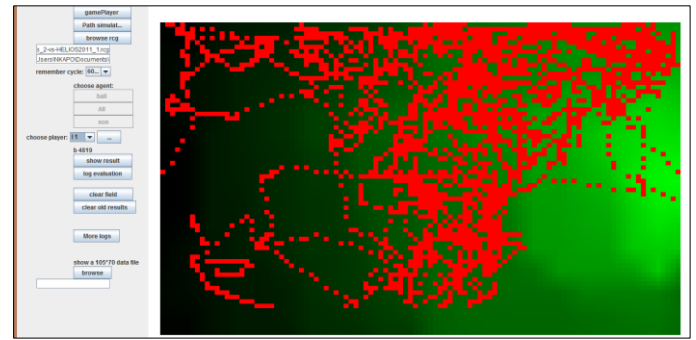


Fig 1.ball positions during the game up to cycle 4819

### 1. Static evaluation debugging

In Cyrus 2013 we divided the field to 5 meters grids then we evaluated each cell (figure 2 a) after that we made those evaluations continuous (figure 2 b). Via using this software, by choosing one point of the field we can specify the probable path to the opponent goal that makes it possible to debug this evaluation on demand or as a whole (figure 2 c).

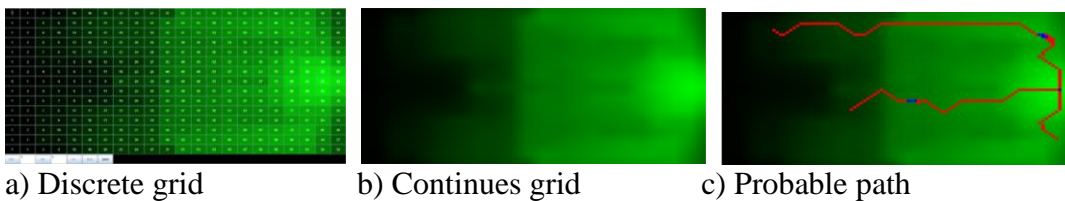


Fig 2.static evaluation and probable path

### 2. Presenting information

In this part, all the passes, dribbles, and other information will be presented in one page as a whole and by using this part the main problems of the team will be understand and also the ball movement chain by each team can be specified in this part. This part is used in defensive sections and shows system weakness. Fig 3.

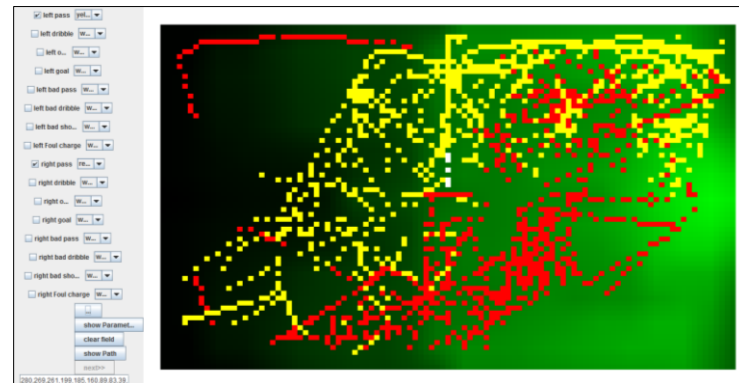


Fig 3.Presenting information (red path shows right pass and the yellow one is left pass)

### 3. Optimizing evaluation

This is a main capability of the software and by using this capability the field evaluation that is the main states evaluation can be optimized for different teams. The software can get one or more logs and gains the behavior chain of our team from the cycle we own the ball until we lose it or achieve a goal. Considering the positions that ball passes through them, we change the evaluation of cells according to the behavior chain. For example if a chain causes a goal, the path will get better evaluation. Also if a chain causes counter-strike or it didn't reach a good target, the evaluation of chain positions will decrease. This capability can be used in defense state evaluation but not implemented for defense yet. Then by using new evaluations and old ones, an optimized evaluation will be gained. Before competition we will add this capability online by using coach. This evaluation is as follow: ( i is the number of games)

$$NewEv(i, x, y) = ( OldEv(x, y) + SetEv(i, x, y))invert To range [0,100]$$

$$BestEv(x, y) = ( a * OldEv(x, y) + b * Avg( NewEv(i, x, y) ) ) / ( a + b )$$

By using the mentioned formula and analyzing 10 play logs versus Yushan field evaluations turned out. Fig4.



Fig 4. Analyzer result for evaluation