SYSTEM DESIGN PROJECT 2012

Milestone 4 Individual Report Group 7 – s0951580

INTRODUCTION

Throughout the past two weeks, I have been involved into the development of the vision system and I also was involved with resolving some issues whit the robot's construction and our control interface. My main contributions for this milestone was getting a new interface for the vision system , using sliders, writing a guide so that other team members can use it, writing Junit tests for some methods for the vision system. Also I resolved some issues with the dimensions of our robot and resolved some crucial bugs in arcing and verified the result using pen and paper.

Vision

I added a tab to the existing GUI to control the thresholding values of our vision system. This was of a huge convenience to everyone as it substituted the previously hard coded values. I used the Java provided slider API to implement it. I also wrote a guide, explaining how important each value is and how actually our vision system works. This I believe made the system by far much more usable, not only by my team-mates, but also for future SDP students, who would have a source of explanation of how the system works. Then I wrote a couple of Junit test. Those were needed for some of the bugs mentioned in the previous report. These quickly reviled the error in the method to look for blue or yellow pixels only inside the green plates of the robots. I quickly handed that over to James, who implemented the changes needed and now we don't get the erroneous behaviour we observed, which was that a few blue or yellow pixels outside the green plate were detected.

I also wrote the method to calculate the ball velocity. This was done taking 5 frames and calculating the angle between the ball position in the initial frame and the last frame. This was used by Darie in his ball prediction method.

Control Interface

There were still unsolved problems with arcing. Working closely with David who originally wrote the code, I found several bugs. At two places there were wrong angle conversion methods, which caused shifts of our coordinate system. I went through all the code from vision to planning and strategy to control and I made sure that all were working in the same coordinate system. This actually solved the problems we had with arcing and using the plans provided by Astar, the logger and pen and a sheet of paper I had a proof that the calculation of the arcs was now correct and working.

I then went on to help Tom with the code for the milestone. However, Darie and Laurie have done most of the contribution for that.

Conclusion & Goals

The work on the vision system is now completely finished. I have to write the last selected values of the thresholds for each pitch in a file, so that they can be loaded next time the program is executed. This is purely for convenience at matches. I also will now be working towards the implementation of our planning system and resolving issues with time delays and other problems we have.