Personal Report for Milestone 2

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1 Introduction

My main contributions were centred around the Artificial Intelligence and managing the team. My main objectives were to help kickstart the AI in order to assure a successful second demonstration and ensure a good communication within the team.

2 Artificial Intelligence

As Milestone 2 required us to have a robot capable of chasing the ball I set out, with Michael Johnson, to create a basic artificial intelligence that would, using its position and the position of the ball, move towards the ball. I assisted Michael in the creation of the first few methods of our AI, and by thinking of heuristics for finding the ball. Also, as we have split our AI team into two, I pushed to ensure that both teams were working with the same standards, making sure that these two different AI(s) still behaved in a similar fashion.

3 Team Organisation

Throughout Milestone 1 our team was faced with some communication issues. During our performance review two of our team members did not show up and had no work available to prove they had done something This was a problem I set out to fix. In order to make sure that each member was aware of the contribution of at least one other member I promoted pair programming within our team. I would then make sure that each sub-team was communicating so that no one was left behind or not working. Unfortunately as only 9 of us actively participated in the team one person had to stay alone. This member was building our vision system, a task that should not have been done by only one person. This was a gamble that should not have been taken, even if the Vision System is in a working condition the possibility of it not working was still there. Overall the communication within the team had improved, everyone was able to work on something and give proof of what they had done.

4 Robot

With Michael Johnson I also worked on a new kicker design. This kicker would use a motor and rubberbands to pull back a bar that, once released, would return to its initial state, kicking the ball with a lot of force. This new kicker was much stronger than our previous model as the ball would travel the entire pitch twice as fast as when kicked with the old one. For this new design I helped try to find a way of releasing the bar, and also helped in the overall construction of the kicker.

5 Metrics

To prove that our new kicker was more powerful than the old I spent some time recording the time it took for the ball to travel the pitch using the different kickers. I also recorded videos of our robot performing the Milestone tasks multiple times in order to obtain a probability of success.

6 Goals

For the next Milestone and first friendly my goals are to write documentation on the overall AI system and help finalise the standers the AI teams will adhere to whilst continuing to help build the AI. Also I will re asses the composition of the teams to assure that we do not encounter the same problems.

7 Appendix

7.1 Comparison of the time it takes for the ball to traverse the whole pitch (in seconds)

Old Kicker	3.4	3.7	3.8	3.1	3.2	2.7	3.2	2.8	2.9	2.9
New Kicker	1.1	1.6	1.5	1.6	1.2	1.6	2.0	1.9	1.2	1.7

Average speed of ball with old kicker: 3.17 s.
Average speed of ball with new kicker: 1.54 s.

Average general speedup =

$$\frac{3.17}{1.54} = 2.03$$