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18-578
Team F
Individual Lab Report 10

Individual Progress

The main thing we've been doing this week is testing our system.

My main contribution has been the addition of two lasers onto the system. The reasoning for this is that we needed a way to properly align the system, no more eye balling. Richard attached the lasers to the system. What we found was interesting. Basically the ball is curving to the left on all of our shots, sometimes almost a foot in deflection. We tried to make it shoot straight by changing the wheel speeds, but we didn't see a significant change. So thus we let the ball always curve into our target. Figure 2 shows the two lasers on the base of the shooter.

The code now detects whether a target is moving or not. If it is moving, then it'll shoot it with the dynamic target strategy. Else, it targets it as usual. Right now we target only one color per run.

Challenges

Inconsistent shooting has been a bit of a challenge again. Every minor tweak forces us to recalibrate the system. We have made modification after modification to our system to help improve the consistency of our shooting. If everything had worked the first time, then we would have been done a month ago.

In any case, our latest solution was to add a brace to our wheels. We found out that the acrylic was actually warping, causing the wheels to bend outwards and flex quite a bit. This is very bad and explains why initial testing when the acrylic was made was awesome, but over time it has progressively gotten worse. Our very first initial test was during our system demonstration and it looked pretty good! At this point we need to stop making modifications on the physical system and nail down our software. I never like making a system where I have to pray, but it looks like I'll have to start praying.

We also found that our hopper system is too heavy. When the shooter pans, it doesn't always pan to the same location due to the weight of the hopper. Essentially the servo does not have enough torque. This isn't good because we have a week left to finish this. Richard is trying to figure out a good solution to this problem.

Teamwork

This week's main focus has been on modifications. So for once the work has been a little different! CMUcam4 work is basically done, so instead I was tasking with assisting in testing and making improvements. SooHyun, David, and Richard had the same basic tasks. Richard did mechanical support as needed. He made modifications to the shooter top plate, along with replacing the shooting wheels.

Future Work

The future work left is really just improvement of accuracy of the shooter. We need to make improvements to this and hopefully the fix as of April 25th will help us enough on accuracy.

Richard is also figuring out how to solve the hopper problem. A TA made a good suggestion on putting the hopper on the camera mast and have the tube located on the shooter. We are considering this plan at the moment.

Figures

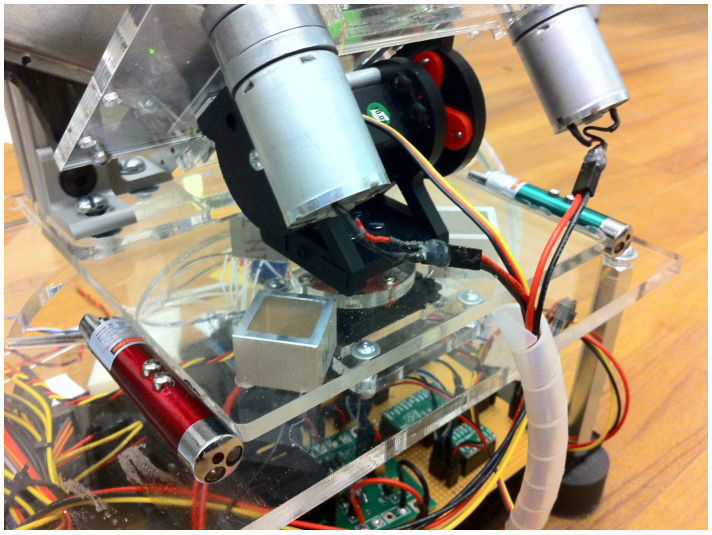

Figure 1. Laser Attachments