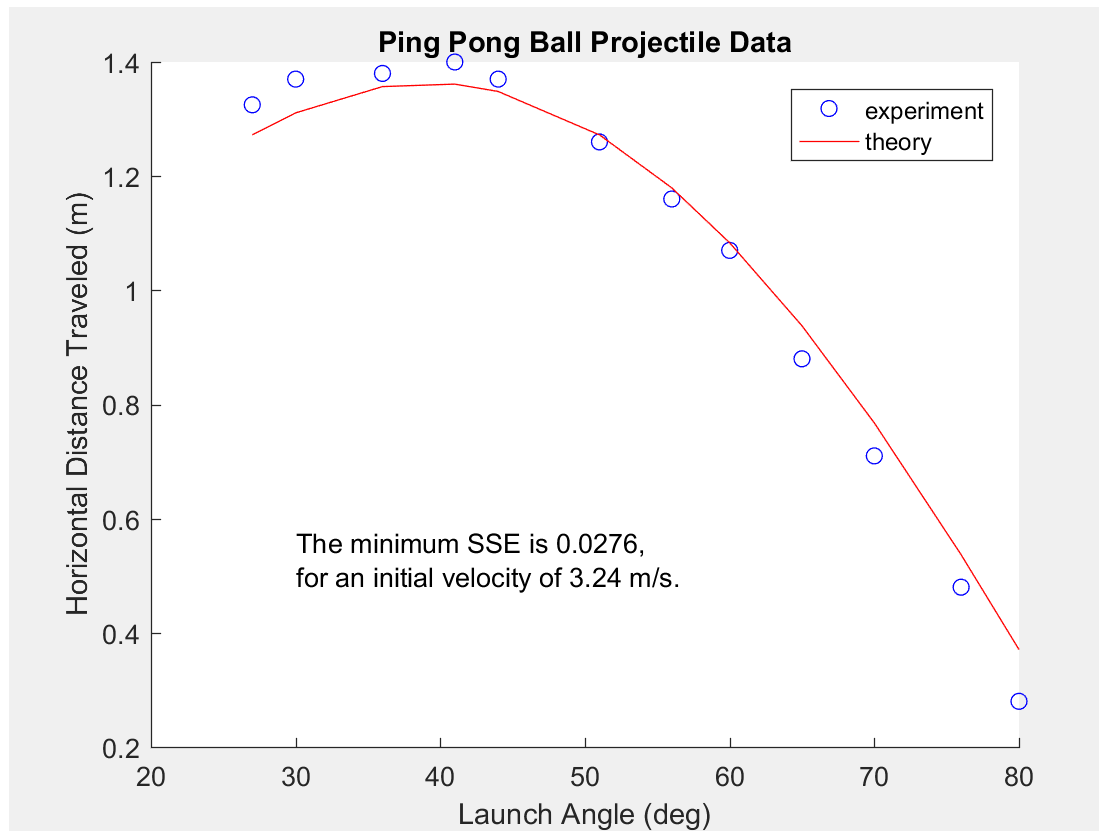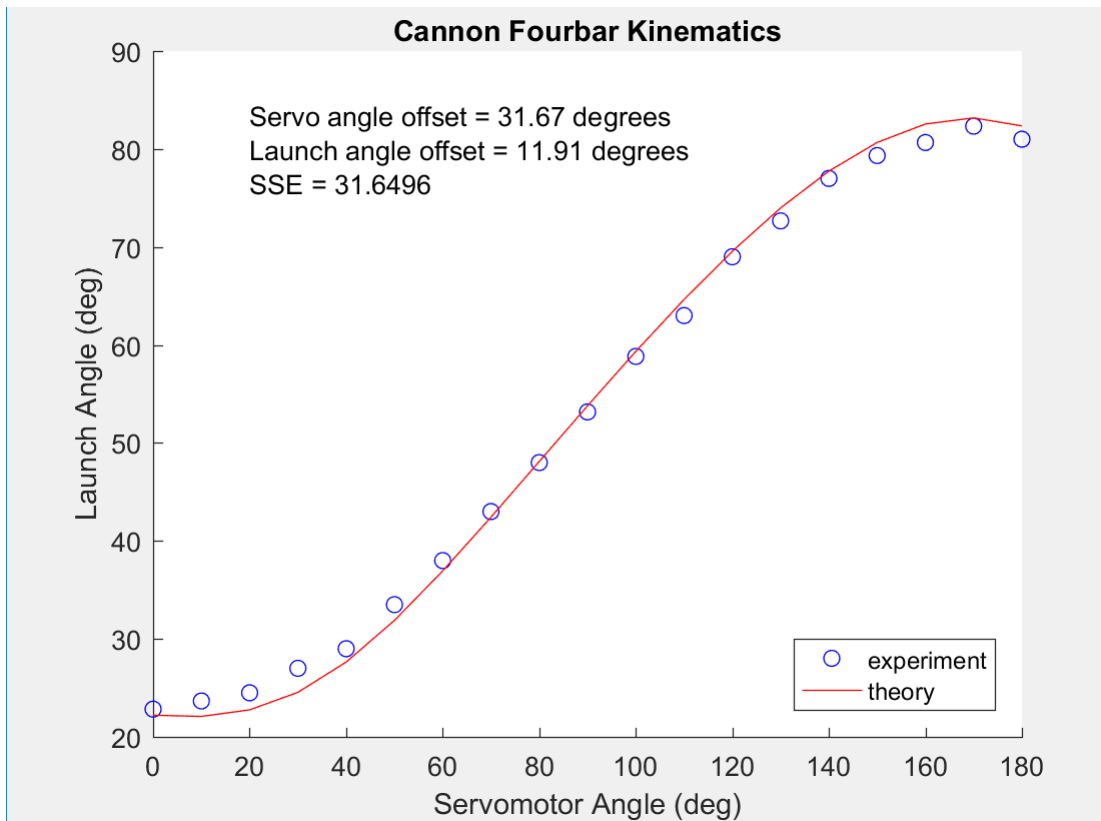1. Provide a plot of your distance vs. launch angle experimental data* and your fit from *HW7_projectile.m.* The resulting velocity should be displayed on your graph, or if it is not, include a screen shot of the velocity displayed to the Command Window.

   (*the data you used to obtain the experimental velocity you used for the competition (if applicable) or your best data)

2. Provide a plot of your launch angle vs. servo angle experimental data* and your fit from *HW7_linkage.m.* The resulting offset values should be displayed on your graph, or if they are not, include a screen shot of the offset values displayed to the command window.

   (*the data you used to obtain the offsets you used for the competition (if applicable) or your best data)

Cannon Fourbar Kinematics

Servo angle offset = 31.67 degrees
Launch angle offset = 11.91 degrees
SSE = 31.6496

○ experiment
— theory

Launch Angle (deg) vs Servomotor Angle (deg)

3. Were you able to hit targets using your velocity from *HW7_projectile.m* and your offsets from *HW7_linkage.m*? If not, what adjustments did you make to these or other values in order to hit targets?

   The offsets helped, but we did have to do slight tweaks to the velocity as it seemed to change from day-to-day.

4. Were you able to use a single velocity/power for all of the targets, or did you need to split the target plate and use two different values?

   We were able to use a single velocity to hit all the plates.

5. If you did not use the projectile motion and/or fourbar kinematics equations in your competition code, briefly describe how you accomplished your targeting.

   We used the projectile motion with slight tweaks as a velocity change from day-to-day. If it was shooting over the plates, we would increase the velocity for the calculations. And if was shooting short, we would decrease the velocity.

6. Briefly describe any ways (if any) in which you deviated from the suggested Arduino pseudocode and/or any unique programming strategies that gave you an edge in the competition.

   Because we changed the linkage we cut some of the loops on the for loop as it would never use them. Also, we changed the incrementing in the for loop as the servo would only take whole number. So, having it increment at .1 compared to .01 gave us a very similar result.

7. Briefly describe any ways (if any) in which you modified the hardware, actuators, or sensors in order to compete successfully.

   We had to raise our reloaded as it would hit the cannon with the new linkage. We also had to add to beams to each side of the cannon as the reloaded was still not high enough and would sometimes try and pull the ping pong ball out of the cannon after reloading.

8. Please complete the following table:

	Maximum # of targets hit in a single run
During the competition	6
During Demo 6	6
Ever	6

9. Briefly describe the biggest obstacle, in your opinion, to hitting targets.

   Trying to speed up the code while keeping it accurate.

10. Briefly describe the most difficult aspect of the project.

    Having to fix our count stripes as it would give us incorrect readings

11. Please provide any feedback you think would help improve the project and competition in future semesters.

    Warn teams if they would change their fourbar linkage it would cause issues with the reloader.