15 Jan:

Updated auto\_v1

Tested till TZ1

Need Red Spray Paint

Need to tune PID at higher speed

16 Jan:

auto\_v3

Untested

Need to test pins, direction, speed

Code contains shooting from TZ1 and TZ2 till wait for manual for rack 2 transfer

17 jan: uptil 9 pm

Auto\_v4

Fixed code bugs

Mechanism 1 and 2 connections completed and pins updated in the code

Tested Till State 7;

To be done - test and mount ultrasonic, voltage converter, transfer practice

Use auto 4 updated.

Uptil 1 am

Auto\_v5

Time variables calibrated in state 1,6,7 tested 10 times each

Mechanism changes

Main problem: in state 4,10 (alignment using limit switches) the bot is not

moving straight. In state 10 the bot is moving out of TZ2.

To be done - mount ultrasonic, voltage converter, transfer practice

Use auto\_v5

Note: throwing code is commented in state 4,10.

19 Jan: uptil 3am

Auto\_v7

Code working till TZ3. TZ3 shooting needs to be tested and its **mechanism pin mapping to be checked.**

**PID for x direction needs to be tuned**

**TZ1 mechanism having mechanical problem and limit switches(both magnet and solenoid) are not getting pressed.**

20 Jan:

Calibration of PID in x-direction done.

Mechanism pins checked

Encoder tested

Testing of full run

Transfer testing

22 Jan:

auto\_v11:

Throwing TZ1, TZ2 working

Arena Line Problems Fixed

Align before golden rack transfer added(untested)

23 Jan Night:

Wiring secured. Lower plate remaining.

Solenoid Valve problem fixed. (MOSFET problem)

LEDs added.

1st glows on manual detect, 2nd on ball transfer detect then you have 10 seconds to take back manual bot. After that red light glows and then after 2 seconds, ball shoots

Electromagnet remained ON.(MOSFET problem)

NEED to keep EXTRA MOSFETS ready for practice.

CHECK ELECTROMAGNET

Need to tune y PID with bottles

Auto\_v13:

LEDs added

Transfer distance updated to between 10 and 15

24 Jan Night:

Codes:

mechanism\_test :

Code for testing magnet, solenoid, ultrasonic.

Commands for controlling solenoid and magnet

q: solenoid high

a: solenoid low

w: magnet high

s: magnet low

Throw\_test\_v2:

Code for testing throw.

Both in testing folder

Problems:

MOSFET problems fixed using 3.3V to 5V converter. Solenoid and magnet working now. MOSFET PCB is switched with UCB due to more grounds in UCB(required in converter).

Ultrasonic detecting throwing mechanism extension resulting in false ball transfer.

-Could be issue of yesterday

-Now mechanically removed

Ultrasonic distance code gives different distance in different loop times. Thats why Arjun noticed 19 unit distance and we 13-14. Updated new code from Rahul sir which works fine in auto\_v15

Magnet limit switch wires broke. Rewired it.

To do:

Manual bot distance needs to be set for ultrasonic

Confirm transfer distance range… its around 30 for ball in rack and around 14-15 after ball transfer

27 Jan: Problems:

1. Tz 2 mai manual ko jb golden rack transfer krni to ultrasonic bekaar readings dera n detect kr le rha.. (ek baar khud laptop lga k chlalke dkh lena pura)

2. Circuit k neche wale castor k bolts ya aas paas kuch arena pe touch ho jara arena sahi na hone k karan jis vjh se bot line chodra kbi kbi(especially from state 0 to state 1)

Code: auto\_v2.0 hai full run k liye

Usmai manual reverse wale wapis 5 se 90 set kr dena... Test krne k lie chang kia tha

28 Jan Day:

Done:

1. Ultrasonic detecting manual while golden rack transferring has been made workable to some extent.
2. Golden Rack Transfer Practice. (A trick is needed for the same. Consult Tanay/Abhay before practicing for that)
3. Full Run practice without manual.

Problems:

1. In some runs auto is leaving line due to arena problem.
2. Golden Rack is not able to transfer balls to mechanism(Mech problem)
3. Golden Rack prone to falling
4. Piston moved out of arm position resulting in stuck mechanism (Mech problem)(Consult Devansh Sir)

To Do:

1. Align before Golden Rack Transfer needs to be added
2. Limit Switch (Mech + Electrical)
3. Golden Balls Loading to mechanism fix (Mech)
4. Golden Rack fix so that it doesnt fall (Mech)
5. Point 4 of Problems (Mech)
6. Speed Optimizations (Needs to be done for 2-3 states only at a time to check repeatability)

Code:

Auto\_v2.1:

1. Ultrasonic fixes. Distance adjustments.
2. Added Vibratory motion after golden rack transfer to adjust rack properly.

Mechanism\_test:

1. Use it to test diff mechanisms/Debugging or throw practice

28 Jan Night:

Code:

Auto\_v2.3(Tested):

1. Golden ball shoot from wall added.
2. Code works for full run.

Problems:

1. Castor wheel below circuit when comes into ground contact makes bot rotate about castor axis. Happens mostly near starting zone and sometimes when rotation bot. Frequency is more when bottles are mounted.

To Do:

1. Add align after rotation before golden rack transfer(Elec)
2. Golden Rack LS spindle(Mech)
3. Golden Rack rotation code (Elec)
4. Retry code(Elec)
5. Retry Switches + LEDs + emergency switch(Elec)
6. New PCB
7. Motor mount is cracked and needs to be replaced(Mech)(Pending).
8. More Y Needed. (Mech)
9. Speed Optimizations (Elec)
10. Castor problem(Mech)(IMPORTANT!)

29 Jan:

Code:

Auto\_v2.3.1(Untested):

Added alignment during and before golden rack transfer.

8 Feb

Code:

Auto\_v2.3.2

Optimization

Time from TZ1 to TZ2 reduced to 13s

9 Feb

Code:

Auto\_v2.4.3:

1. Added retry code
2. State 21: same as state 1, just skip a junction, longer time\_2\_slow[21] val than state 1. Next State = 8
3. State 30: same as state 0 but with bot reverse, lsa\_0 and lsa\_1 functions reversed, base and acceleration switched signs. Next State = 31
4. State 31: same as state 21 but with reverse bot orientation. Next State = 32 if retry\_state = 2 ie wait for gold rack transfer else Next state = 15 if retry\_state = 3
5. State 32: Move a little towards TZ2 (and wait for manual for gold rack transfer ie state 14).Next state = 14
6. **set\_reset\_state()** contains parameters for states related to retry. Switching retry states through retry buttons is commented and booleans are hard coded for testing. Change them and check
7. LSA tab updated

Things needed to be done:

1. Add golden rack transfer in code
2. New Sensors
3. All LS, solenoids, sensors debug state will be integrated in main code only after retry code is fully working
4. 4 small cardboard pieces with green arena background and plus line junctions for full and easy testing in air of autonomous bot

