Malden Catholic High School Robotics Team

Structure & Organization – Team Demographics

Seniors	Juniors	Sophomores	Freshmen
Mack OD	Mike S	Aaron B	Mike M
Dave S	Owen K	Dante L	Stephen D
Aidan C	Reinhard T		Sam S
Harrison J	Zach OC		Daniel R
	Abinit G		Hannah B
	Alex N		
	Alex P		
	S Bao		
	Bobby S		
	Andy T		
	Dom D		
	Leo		
	Peter F		
	Gavin S		

- We have 25 dedicated team members
- Codivisional Catholic School (it's the inaugural year of the girls class)
- Freshmen: 5
- Sophomores: 2
- Juniors: 14
- Seniors: 4
- Boys:Girls=24:1

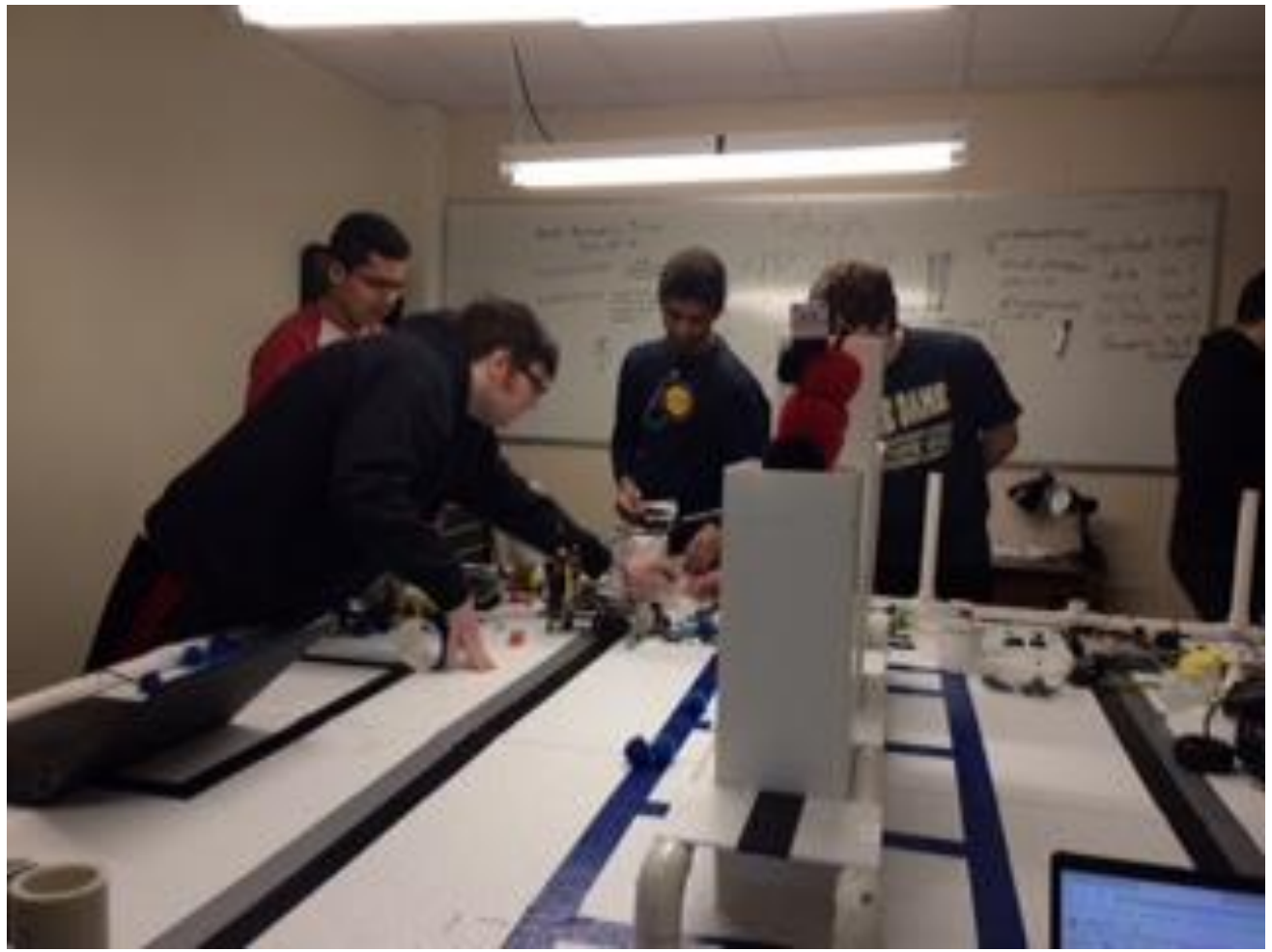
Structure & Organization – Meeting Process

When:

- Every day after school
- During vacation weeks
- Sometimes on weekends

Where:

- Game room
- Computer lab
- Room 206

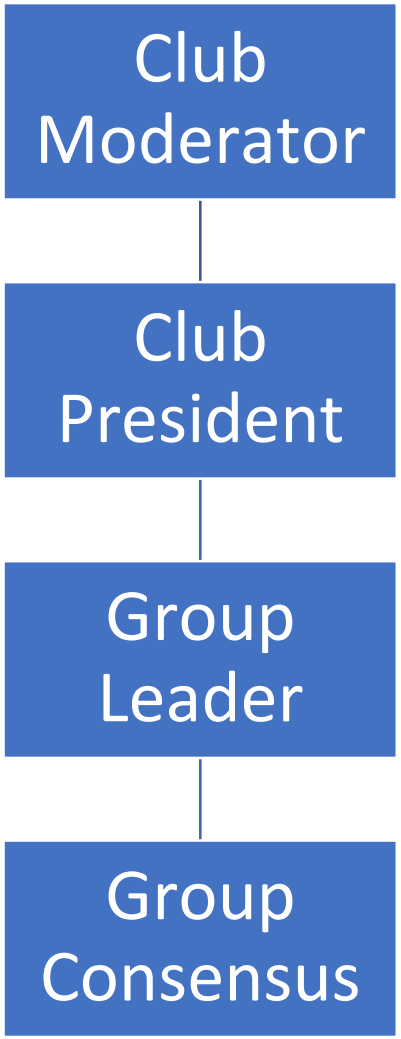


Structure & Organization – Team Organization

Builders	Programmer	Both
Mack OD	Harrison J	Hannah B
David S	Daniel	Andy T
Alex P	Mike M	S Bao
Owen K		
Aaron B		
Aidan C		
Dante L		
Sam S		

Teamwork – Decision Making Process

1. Try to come to a group consensus
2. Have the group leader help make a firm decision
3. Have a club president help make a decision
4. Have the club moderator settle the decision



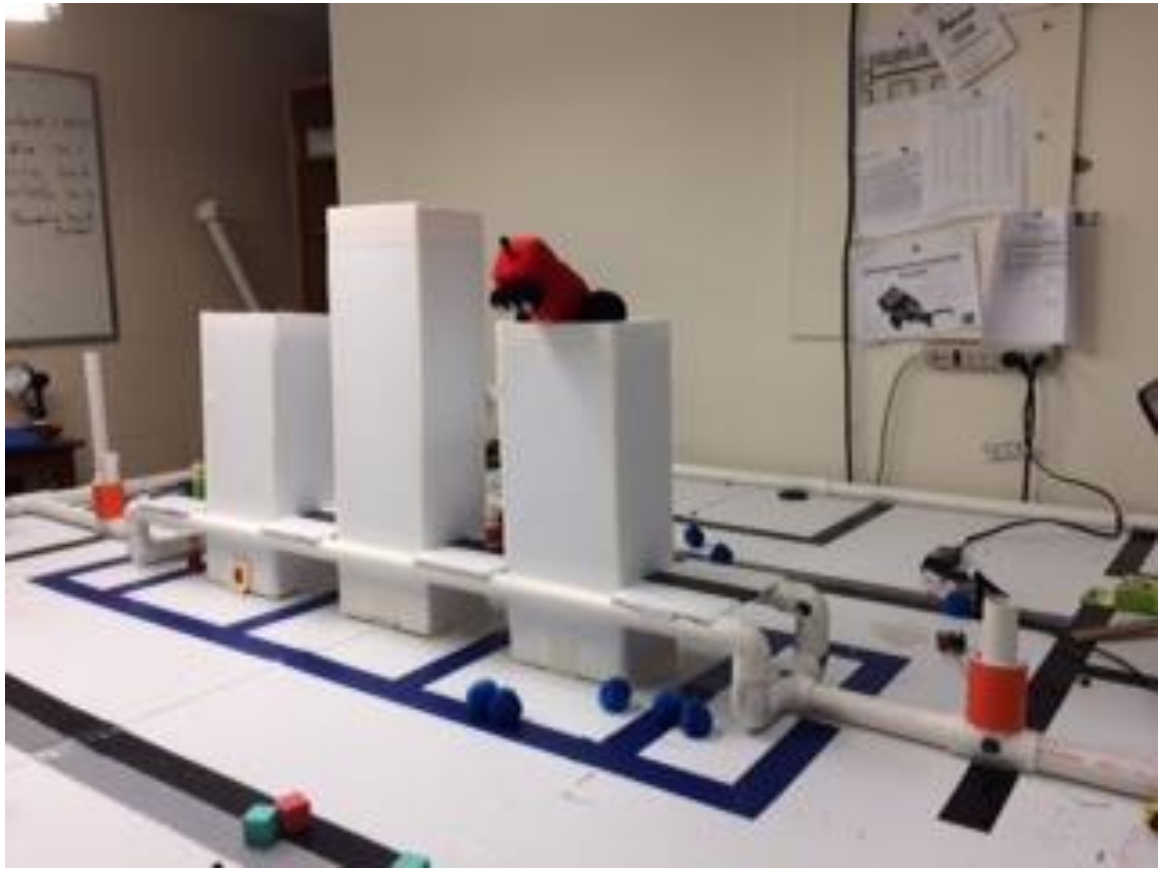
Teamwork – Goal & Strategy Development

GOAL: To create a robot capable of getting the blue poms into the water tanks and moving it to the burning buildings instead of focusing on bot guy and the mayor on the building

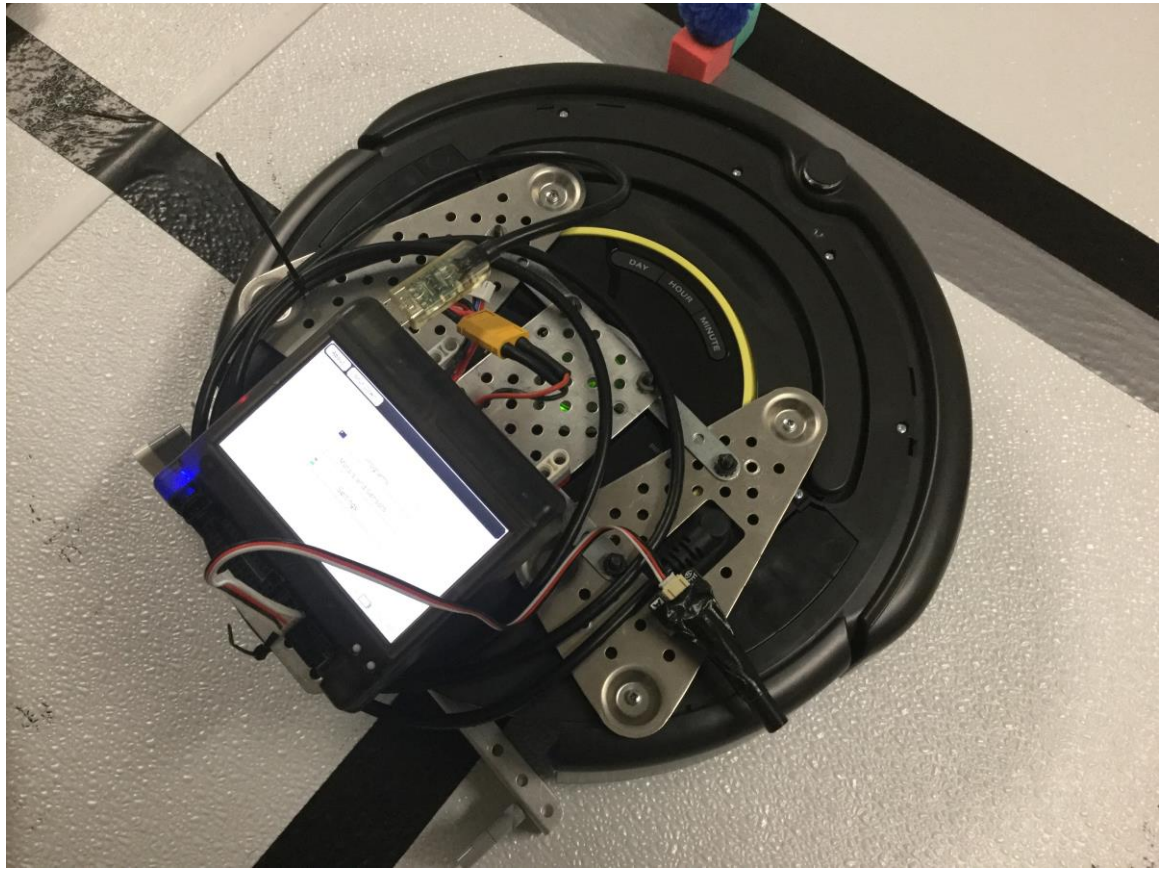
DEVELOPMENT:

- Our initial prototypes were ineffective and took up too many resources.
- Moving the poms into the water tanks to be moved to the burning buildings

RESOLUTION: We refocused our resources onto a robot that would move the poms to the burning buildings and was also effective when we tested both robots for the first time

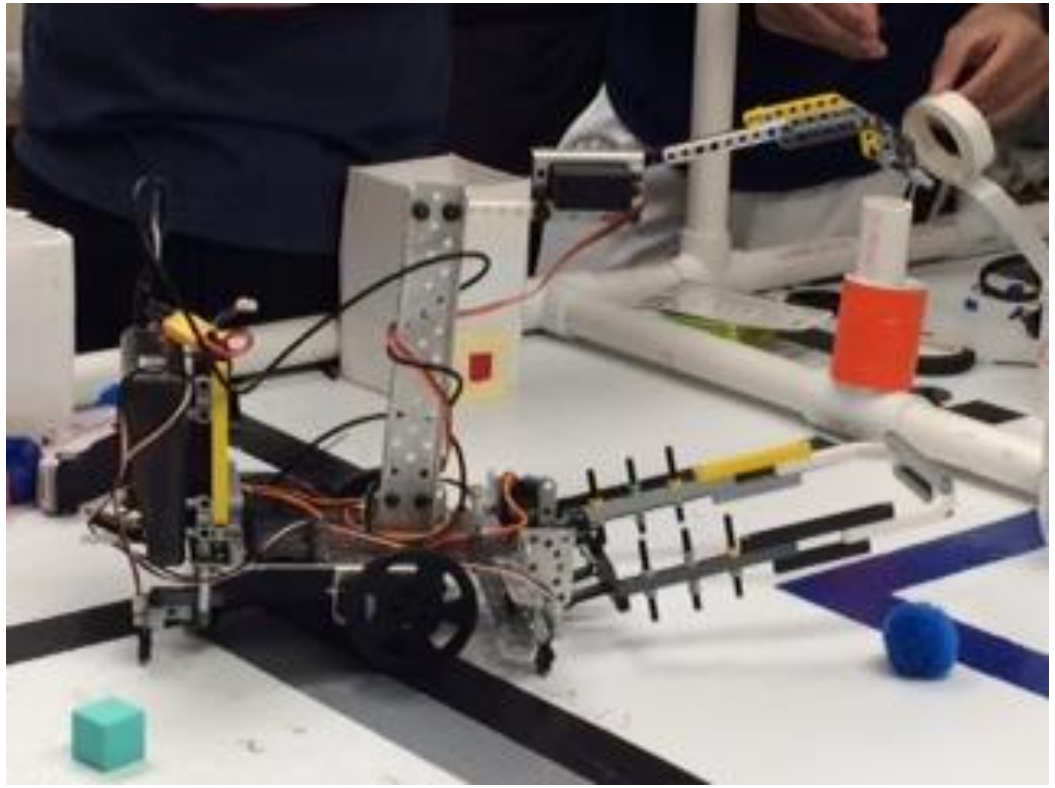


Jesús



- *Purpose:* To get the poms and medical supplies to the disaster relief
- *How it works: Pushes the poms and medical supplies to the disaster relief zone and to collect the fire truck and deliver it to the non burning medical center*
- *Jesús's Parts: Metal pieces and a small amount of LEGOs*
- *"He is beautiful!"-Gavin*

ThanosCar



- *Purpose:* To move the ambulance and people to the non-burning medical center
- How it works: ThanosCar uses its sweeper to push the people and the ambulance to the medical center. Uses two servos to gather people from the building. It uses two IR sensors to follow the Blue tape. Thanos also has a camera function scan for a non-burning medical center to take the ambulance and people.
- Thanos's parts: Lift arm LEGO pieces, two IR sensors, camera function, wheels, two motors
- Nicknames: "Thanos" and "Mad Titan Robot"

Robot Design – Test Data Analysis

Our data specified

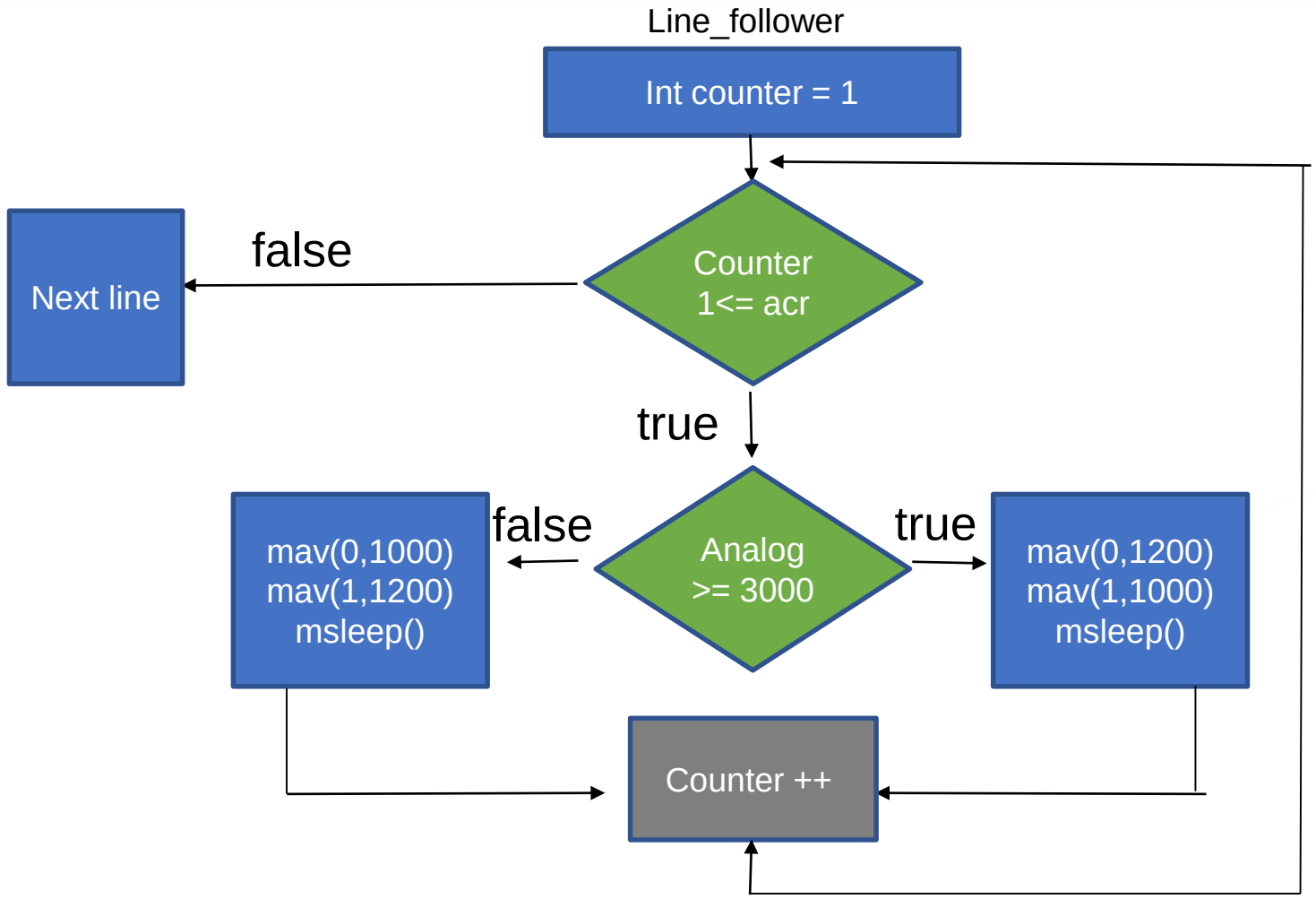
Trials #	Injured People	Healthy People	Points
1	6	4	260
2	5	5	225
3	6	6	270
4	2	4	100
5	3	3	270
6	1	2	50
7	5	6	230
8	2	4	100
9	4	3	310
10	3	1	125
Average	3.7	3.8	194

Stats

- Average # injured people ~5
- Average # of healthy people~7
- Average # of points~175
- Median ~ 180

Robot Design – Robot Code Example

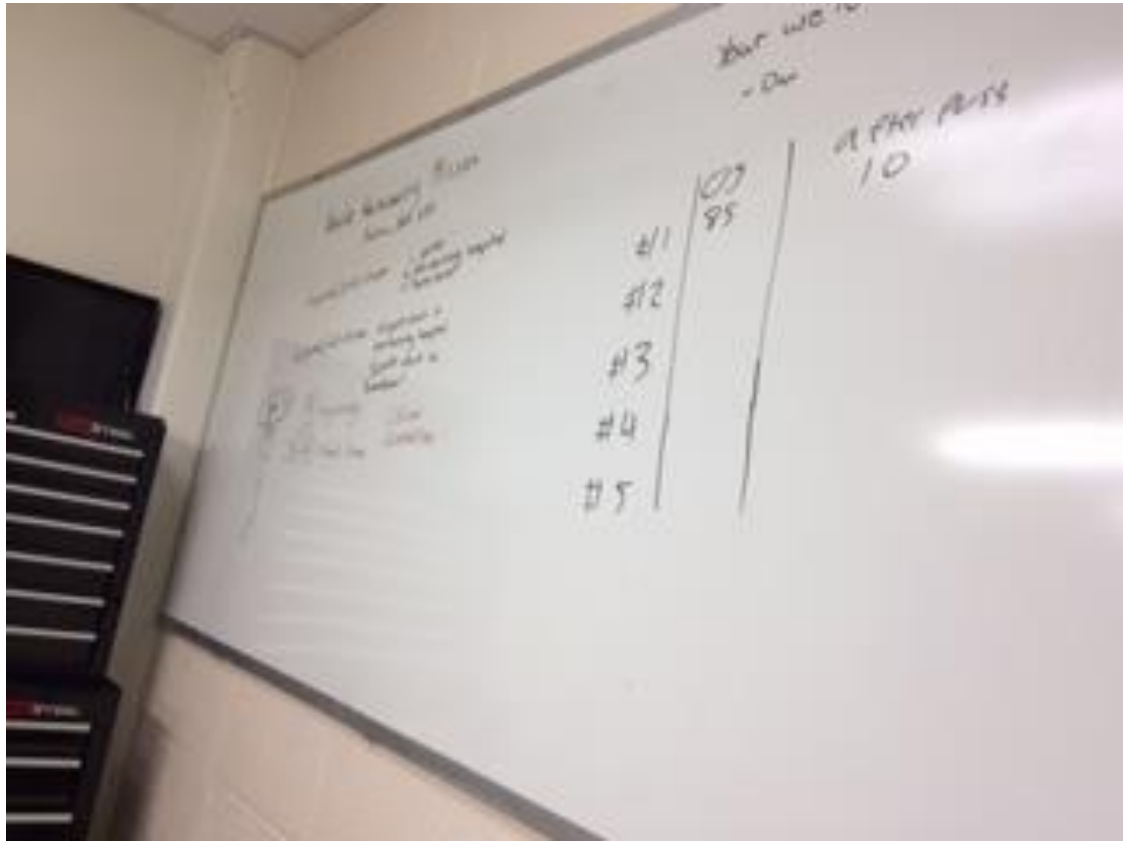
```
void line_follower(int runtime, int tape_benchmark)
{
    int counter1 = 0;
    while(counter1 <= 10*runtime)
    {
        if(analog(0) >= 3000)
        {
            mav(0, 1200);
            mav(1, 1000);
            msleep(10);
        }
        else
        {
            mav(0, 1000);
            mav(1, 1200);
            msleep(10);
        }
        counter1++;
    }

}
```



Team Conflict

PROBLEM: We couldn't decide which robots to use

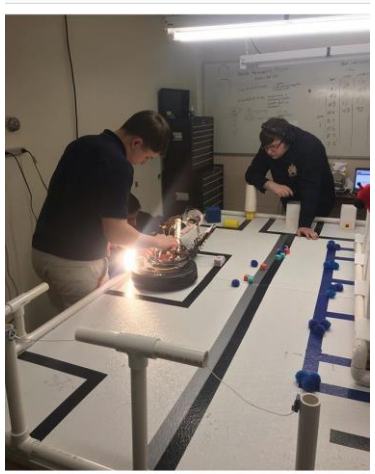
SOLUTION: We ran each robot to find which ones were most consistent and could score the most points and chose the best ones



Robot Error

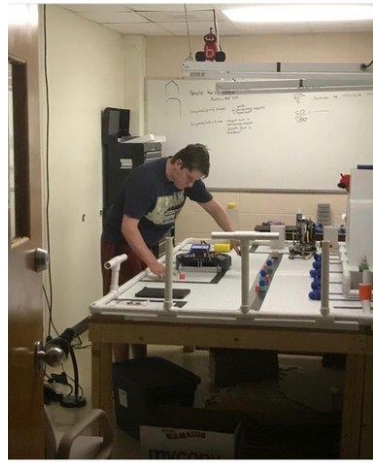
- ERROR 1: ThanosCar wasn’t reliably following the tape
- SOLUTION 1: We added Top Hat sensors so that ThanosCar could line up with the tape before proceeding
- ERROR 2: Motors veering off
- SOLUTION 2: Instead of relying on the motors we relied on the light sensors and IR sensors

Social Media Promotion



Liked by **pacythang2539** and **22 others**

d_rod03 GO MC robotics team#maldencatholic



The End

Thanks for listening!