

Basic Information

Team Number

4272

Team Name

Maverick Boiler Robotics

Programming Language

What programming language do you use?

Java

Public Code

Is your code public?

Yes

What is your team's GitHub account?

Maverick Boiler Robotics Team 4272

Vision

What camera do you use?

Limelight 2

What do you like about your camera?

Cosistency

What do you dislike about your camera?

Inaccurate eye dropper tool

How would you compare this camera to other cameras you've used in the past?

Better and tracks quicker

If you could do vision differently, what would you change?

Used grip alongside limelight

How are you planning to do vision next year?

Limelight

Path Planning

How do you design your paths?

Sections

What library(ies) do you use to make your paths?

ramsete Autonomous

What geometry do you use for your paths? (Splines, piecewise, circle, etc)

Splines

What forms of path planning have you done in the past and if you have changed them, why?

We used the ramsete because we wanted to experiment with it

How do you integrate sensors with your paths?

We used the encoders built into our NEOs and a gyroscope for direction

If you could do path planning differently, what would you change?

More refined so it's better for minor changes

Training**How do new programmers get trained?**

Our programming mentor shows students a basic swerve drive simulator, and they do exercises to program it. We also encourage students to do basic programming training, for instance Codecademy.

Do new programmers have to work outside of practice?

Yes

What is your general training order? (ex. Classes, functions, data types, reading documentation)

There is no set order, it's more experienced-based (on the job)

What do you do if there is not enough work for all the programmers?

They go to mechanical for a while or research programming

On average, how many programmers do you have?

2, sometimes 3

GitHub**How do you control access to the team GitHub?**

We make programmers part of the organization

How do you delegate using GitHub?

We don't really have any security concerns, so the two of us just get on it.

How do you handle merge issues and multiple people working on the same file with GitHub?

We don't have enough programmers to come across this.

If your team uses private repositories: what are the advantages of this/why did you start doing it?

n/a

How does your team make ReadME.md documents?

We don't create them

Other Sensors**What other types of sensors do you use?**

Secondary camera for the driver, through bore encoder

How do these sensors help your robot?

Helps driver see, locates position

Of those sensors, which are you planning to use again in the future (if any)?

through bore encoder and limelight

How do you learn what new sensors to try and how to use them?

based off of our needs

Off Season

What do you do in the offseason to prepare for build season?

We design swerve, we look at different systems and program

How does programming interact with mechanical for off season activities?

Mechanical designs and builds, programming takes it from there

Documentation

How do you document your code?

Commenting, a separate page for controls instructions

Have you documented differently in the past? What do you like better now vs then?

No

Build Season

What do your programmers do at the start of build season?

Learn, kitbot, basic drive train

How useful are the tasks that they do at the start of build season? (from 1 - 10)

2

How much time does programming get to program the robot (without mechanical intervention)?

About two days at a time, over about a week or two

How do you divide up the time programming gets on the robot between different mechanisms, tuning, and autonomous?

What is needed first for a functional robot

During programming's time on the robot, how does your team handle mechanical failures and imperfections?

Fix it and go back to work

How do you make the schedule for programming?

No schedule

How does your team use gearbox ratios with encoder counts?

1:1 ratio

How does your team define code standards?

At least a few organized files

Creating from Scratch vs Inheritance

How does your team balance inheriting WPILib functions with writing custom functions?

Mainly use WPILib functions

What are some examples of custom functions that your team has made?

Hopper code for Infinite Recharge

Interesting WPILib Functions

Are there any WPILib functions that are unusual and make your life a lot cooler or easier?

```
shooter1.configVelocityMeasurementPeriod(VelocityMeasPeriod.Period_10Ms);  
shooter1.configVelocityMeasurementWindow(16);
```

What class do you use for joystick control?

HW joystick

What class do you use for automating actions?

Auto

Joystick Layout

Who determines the layout of the joystick for your team?

Driver/operator

How do you manage changes to the joystick layout?

keep them separated, easy to change

How do you test the joystick layout?

Let driver/operator test

PID Tuning

When you get the robot, what is the first thing your programming team does with it?

Write skeleton code

How does your team determine if motors should have encoders or not?

Most are NEOs (we use encoder for shooter, but other NEOs don't need them)

When you PID tune a motor for position control, what is your procedure?

Put all values in tables, tune in the website

When you PID tune a motor for velocity control, what is your procedure?

Guess and check + common sense