

Robot Design

Savir: For our robot design, we tried to improve the mistakes we made from last year. Our primary goal for this year is to have a very effective way to quickly add and remove attachments.

Shivanath: Based on our experience from the past year and our research, we concluded that a box robot would be ideal for what we wanted to accomplish.

Rishir (Samarth demonstrates latch and robot while talking): We've created a rectangle like ring that connects to the robot, and we have added a lock mechanism so that when you place the attachments on the robot, the lock will close on the square like ring and secure it to the robot. One requirement for the attachment is that if it uses a gear it has to connect to the gears on the robot that is connected to the motors.

Kavin: Then we started using sensors such as color, distance, and gyro sensors. As we progressed through only a few missions, we realized a need for more attachments. The design we chose made it easier for us to create new attachments without negatively impacting the robot and other missions.

Samarth: And also, the need for innovative builds. For example we created jigs that are used to align the robot at the same position every time. Also we created trays to deliver experts and audience members and attachments were built to pick up experts.

Savir: We separated our mission into 6 runs. We have color coded them here to show the different runs we are doing.

1. Pick up experts Izzy and Emily
2.
 - a. Virtual reality artist
 - b. Craft creator
3.
 - a. Hologram performer
 - b. Music concert light and sounds
 - c. Augmented reality statue
4.
 - a. Rolling camera
 - b. Movie set
 - c. Delivering audience member and experts
5.
 - a. Deliver Anna the masterpiece, museum curator and the audience members to the museum
 - b. Light Show
6.
 - a. Deliver Emily
 - b. Sound mixer
 - c. Theater scene change

Shivanath: Talk about gear monster. (The gear monster is named like that since there is a monster of gears. It helps the Virtual Reality Artist by spinning the gear that is under the chicken in the Virtual Reality Artist. In the gear monster there is also a claw that scoops up Emily and Izzy. There is a box like attachment)

Rishir: Talk about puller.

Kavin: Talk about Forklift- The forklift is used for completing the Sound Mixer and theater scene change. As the name suggests, it performs like a forklift, by lifting up and down specific missions. For example, the forklift has to lift up the keys in a specific way to complete the mission. And it has to push down 2 times on the theater mission to change the scene to complete it as well.

Savir: Talk about “The Claw” - The Claw attachment is used for pressing down on “Immersive Experience” and also for lifting the “Light Show”

Samarth: We used Github to save and manage our code. Github is a cloud based distributed version control where you can use and manage old code whenever you want. Version control system means you can track and check your old and new code whenever you want. And if needed you can go back to the old code. Everyone in our team was able to access all the code we ever used.

- Say distributed version control. What is version control? Everyone can access.

Rishir: In our code we tried to use good programming practices and reduce repetitive code, such as... Variables in my blocks let us use the same code in multiple places.

- relative positions
- yaw angle
- color sensor for line followers.

This concludes our robot design presentation. Thank you judges for your time.

Finally, what we learned is that we never run away from problems.

EVERYONE: WE SOLVE THEM, Thank you (Enthusiastically)