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AEV Lab 4

Introduction

The purpose of this lab was to familiarize the lab group with the external sensor hardware components, become aware of different types of troubleshooting techniques, and to program function calls using external sensors. The team was given multiple external hardware pieces and taught how to apply the available resources to maximize efficiency of the AEV.

Results

The AEV performed very well on the track. The vehicle ran smoothly with constant speed along the flat part of the track. The AEV traveled successfully from one end to the other (with close approximations). Though its initial success, one problem with the AEV was that the propellers on it were too big and that made the AEV move too fast which would risk it falling off the track. Another problem with the propellers was that they were too close together which could cause damage to the propellers. The AEV that was constructed survived the trip but had to be taken off the track due to its size. The changes that will be made to this design is that smaller propellers will be used or larger wings will be used to insure that the propellers do not come in contact with each other.

The team will use the knowledge gained in this lab to create a preliminary code to complete the MCR scenario by moving the AEV slowly and programming the changes in speed on the AEV to be gradual rather than quickly because if the acceleration is high it would cause the AEV to jerk around which could cause it to fall off the track.

External Sensors Arduino Program with comments

```
 // Program 1:
motorSpeed(4,25);
goFor(2);

 // Program 2:
while (goToAbsolutePosition(4) < 368)
{
motorSpeed(4,20);
}

 // Program 3:
```

```
reverse(4);

  // Program 4:
motorSpeed(4,30);
goFor(1.5);

  // Program 5:
brake(4);

  // Program 6:
save me
```

Conclusions

During this lab, the group assembled external sensors and went through basic troubleshooting to get them to work. The new code goToAbsolutePosition(m) was learned, and its function was tested on the track. The group also realized the propellers on the original plan were too big and needed to be switched out. There were minor difficulties with this lab but everything went relatively smooth. There are no complaints to be had for this lab.

Acknowledgements

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