Reverse Engineering My RC Car Controller

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Introduction

I first noticed an issue with how long it took for my rc car to react to the inputs I was making on the controller, which was a big issue as my car was on the more expensive side. So I decided to to research what might be wrong with it, and I realized it might be the transmitter of the controller. Since multiple people on the internet had related problems with this same issue, I realized that if I didn't want to buy a whole new controller. I then decided that I would probably look and figure out what I could do to fix it myself. That's when I remembered that this was the perfect opportunity to do the Reverse Engineering vex online challenge, which motivated me even more onto fixing the problem.

Part 1: Taking Apart The RC Controller

I then decided to clear out my desk and get to work.

Part 1: Taking Apart The RC Controller

I proceeded to take out the screws out of the controller. This lead to the controller breaking apart in two pieces. I was then met with the motherboard, so I had to proceed carefully to protect it from messing up.

Part 1: Taking Apart The Controller

After carefully removing the motherboard, I realized something terrible had happened. There were scratches all over the motherboard, which was probably the issue I was looking for to fix my controller. I also looked at the piece that the motherboard was connected to make sure that it wasn't it, but with further investigation I had found out that this was not the issue, and I would look into the motherboard issue to fix it.

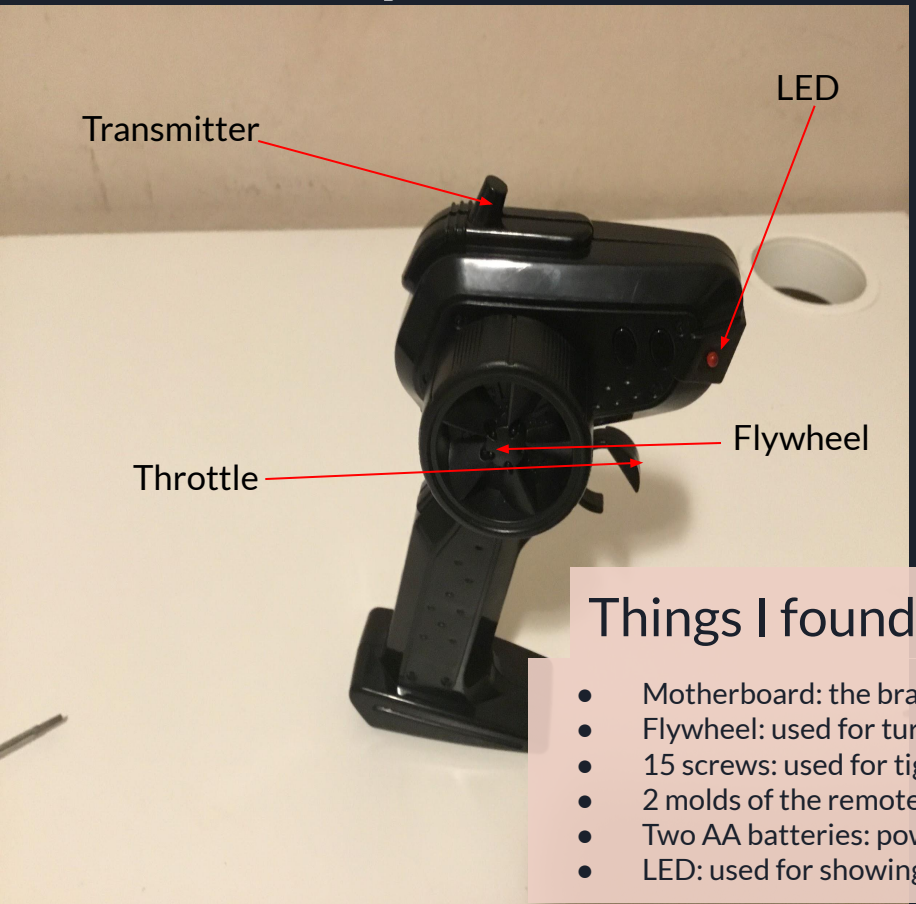
Part 2: Conducting Research

I scoured all over the internet to look how to fix this issue, but eventually I came up empty handed until I found what I had been looking for: a new motherboard for that exact remote. In the meantime, I decided to research all the parts I had found so far inside it. With this, I saw that the motherboard was like the brain, and a sensor had a transmitter for sending data to the RC Car. Most of the other parts that I found in the remote were systems built to trigger sensors in the motherboard so it could sent data to the RC car.

Part 3: Fixing The Remote

With the new motherboard, I used the pictures and videos I had taken when taking it apart in order to put the remote back together.

System Labels and Parts



Things I found inside of the Remote:

- Motherboard: the brain and sensor of the entire device
- Flywheel: used for turning
- 15 screws: used for tightly keeping everything together
- 2 molds of the remote: is the base of the entire remote
- Two AA batteries: powers the motherboard
- LED: used for showing when the remote is on

Lessons

With this project now being done, I have learned a lot from this experience, and I have learned multiple lessons like how to be careful with electronics and circuits, how to carefully remove and put stuff back together, and many facts and information about motherboards that I will use for my dream job of being an engineer.