

# Individual Lab Report 3

---

**Name** : Ardy Dapta Nandaviri Giri  
**Team B** : Space Jockey  
**Team members** : Brian Boyle, Nathaniel Chapman, Songjie Zong  
**ILR03**  
**Submission date** : October 24,13

## 1. Introduction

This report gives a brief description of our team progress along with my individual contribution so far towards the MRSD project. After our last progress review on October 16, 2013, I was working on casting the gecko material and designing the schematic for power distribution board.

In the main project my role is to develop the electrical board including the power distribution board, main controller board and also circuit board for each subsystem.

## 2. Individual Progress

### 2.1. Power Distribution Schematic Design

In task 10, we have already made a conceptual design for the power distribution board. We would like to have:

- Li-Po battery channel input (7.4V, 10A);
- Two unregulated servo channels output: we would like to have the servos work at 7.4 Voltage to achieve a better torque, nevertheless, the channels are still protected from short using fuse;
- Three peripheral output channels that will be used for sensors or camera in the future development;
- One unregulated channel for Arduino DUE power, since Arduino DUE board already has a regulator on board;
- One channel for battery monitoring to the Arduino DUE ADC pin.

Based on that conceptual design, I designed the schematic as shown in figure 1. However, we are still working on deciding the components that will be used on the board.

### 2.2. Create the Gecko Material from Vytaflex-10

I mixed the chemicals of Vytaflex-10 from Smooth-On, Inc. in order to create the "gecko" adhesive material, and then left it for a night in the lab. After doing a simple testing, the gecko is successfully able to attach to the mirror glass and wall as seen on figure 2 and 3.

### **Things I have learned**

This week, by designing the schematic of power distribution board, I learned about the electrical components that will be used to fulfill the requirements of our conceptual design. I also learned how to create the gecko material by mixing the chemicals.

## **3. Challenges / issues**

### **3.1. Choosing the Electrical components**

Our team faced the challenge of choosing the correct components for our power distribution board such as: fuses, zener diode, and capacitor required. We were searching for the components by looking at it on Digikey.com and asking advises from the TAs.

### **3.2. Creating the Gecko Material**

While testing the gecko material V-10, we found that the adhesive material is not dry-adhesive and leaves oily traces instead while sticking to the wall or glass. Since this is just the beginning, we still do not know whether this material is strong enough to hold the weigh of our robot in the future. Future testing which is using foot and load is needed.

## **4. Cross-referencing with the work of fellow team members**

While working on schematic design, Nate helped my to make the schematic seems more neat by giving labels instead of long wires. Songjie also helped me to mix the gecko material and to do the testing on the wall and glass. Brian mostly was working on the GUI.

## **5. Plans / goals for following week**

My future work for the project is to design and develop the electrical system of the robot including the power, main processor, motor controllers and sensors. For the next following week I will help the team to design the board of power distribution board, begin casting gecko adhesive material.

## 6. Figure(s)

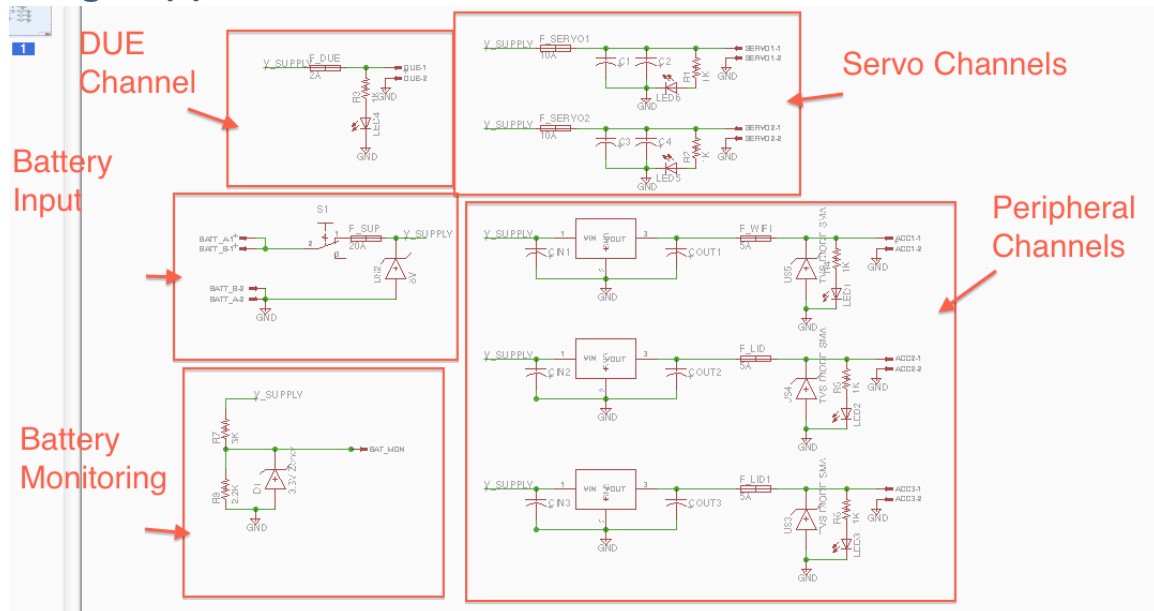


Figure 1. Power Distribution Board Schematic Design

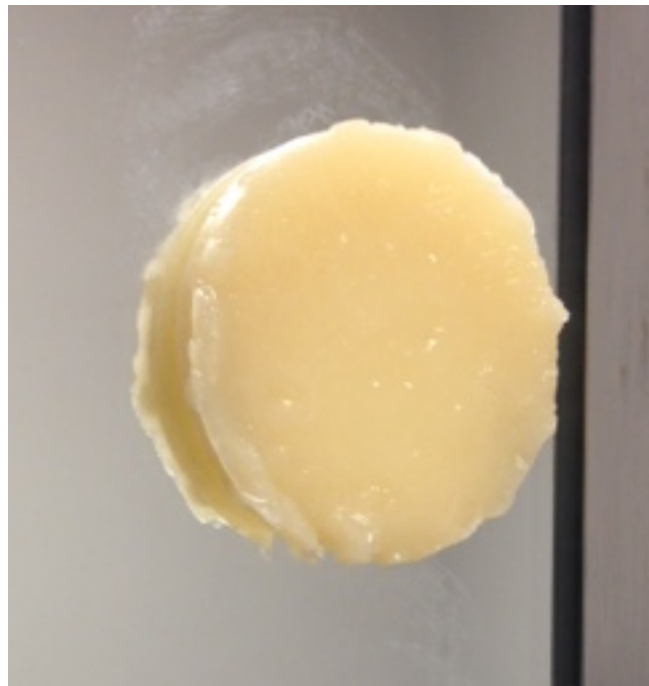


Figure 2. The "Gecko" Material Attached to Mirror Glass



Figure 3. The Gecko Material Attached to the Wall