

Spider Robot Set

1. Description

This is a complete set of a Spider Robot with 18 degree freedom.

It will be a fun, nice look, and challenging robotics project which ready to assemble.

The set includes all the eighteen high-end servos and servo wheels which other sellers does not include.

2. Things you will learn:

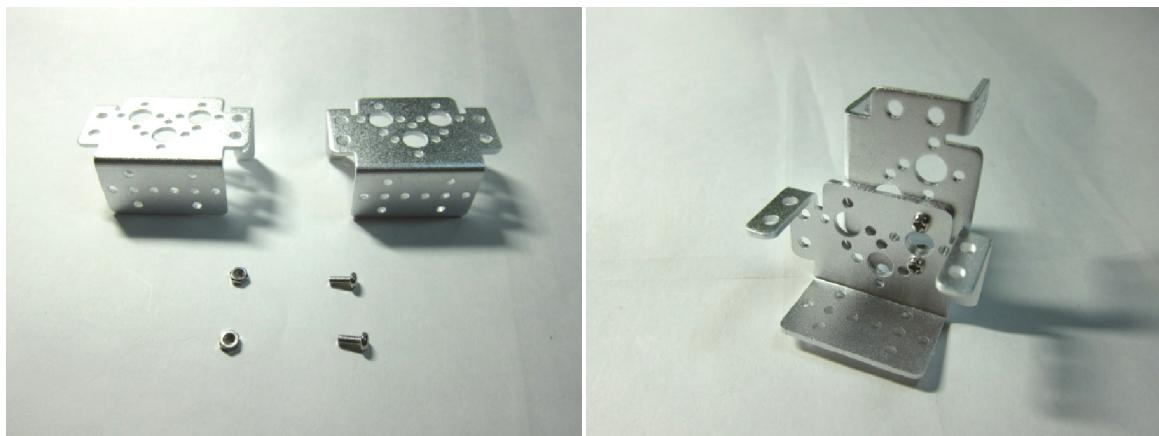
- Robotics control
- Servo control
- Servo controller
- Programming servo controller

3. Things that you need but not included with the kit:

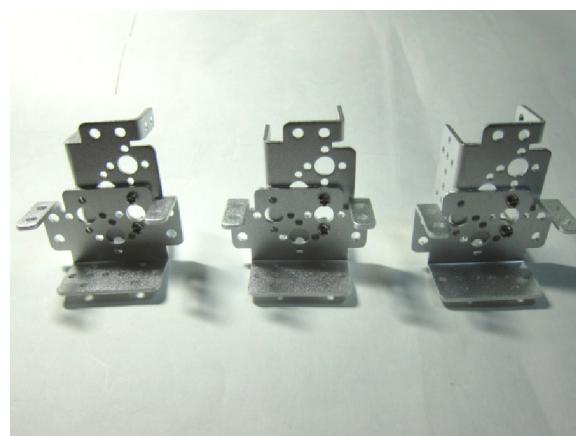
- a. Servo controller
- b. Metal / Plastic standoff
- c. Screwdriver
- d. Spanner / Plier

4. Instruction for assembly (Please read through the instruction before start):

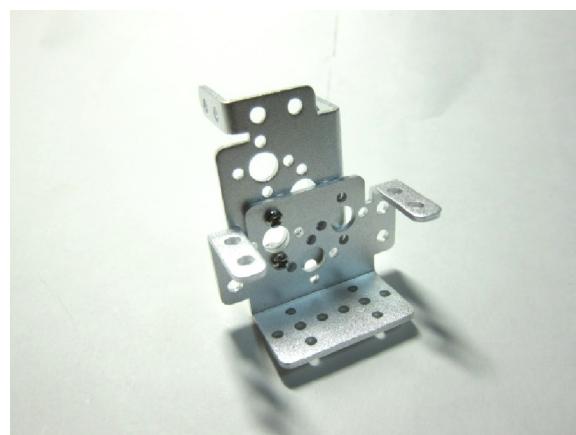
- a. Take 2 servo brackets. Fix them together with M3 x 7mm pan head screws and nuts as below. (Pay attention to the position and direction)



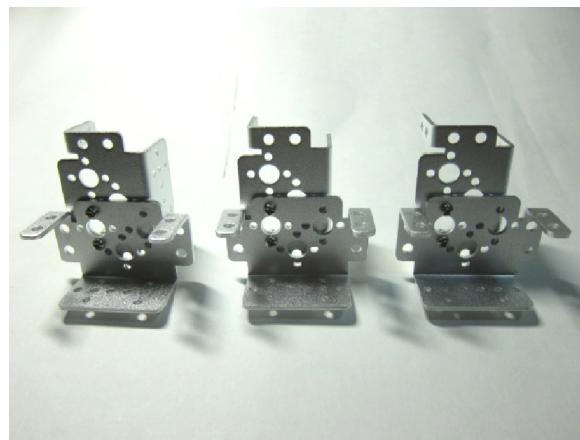
- b. Do the same step three times.



- c. Take 2 servo brackets. Fix them together with M3 x 7mm pan head screws as below. (Pay attention to the position and direction)



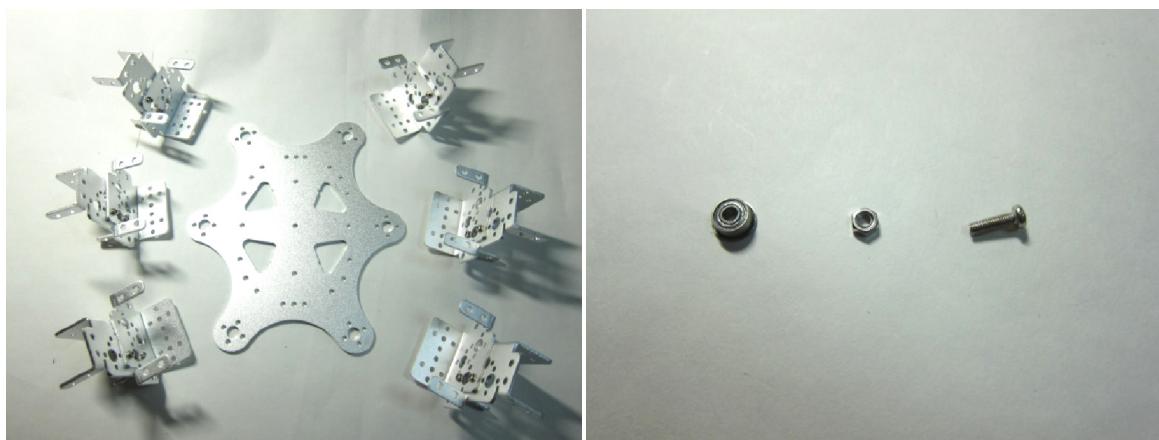
d. Do the same step three times.



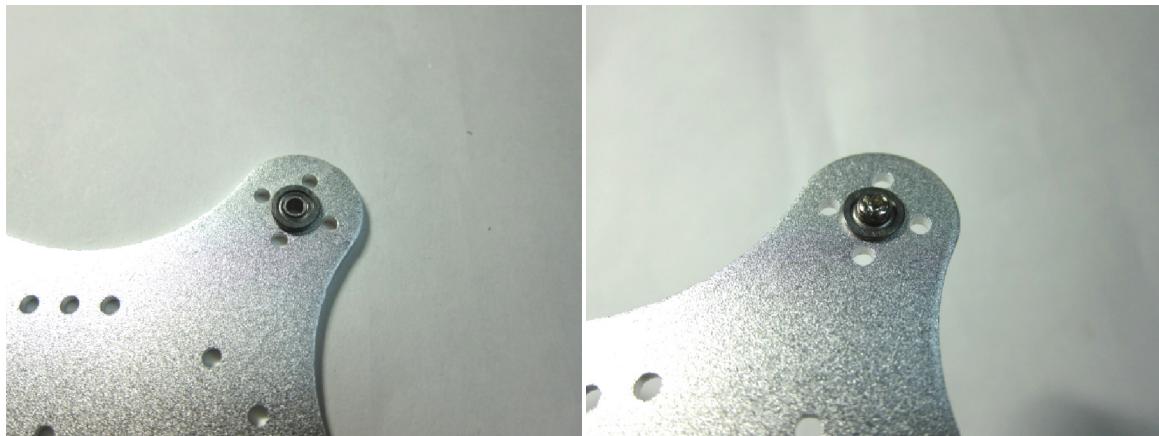
e. Another view for those parts.



f. Pick a mounting plate with the shape as follow. Prepare 1 cup bearing, M3 x 10mm pan head screws and nuts.



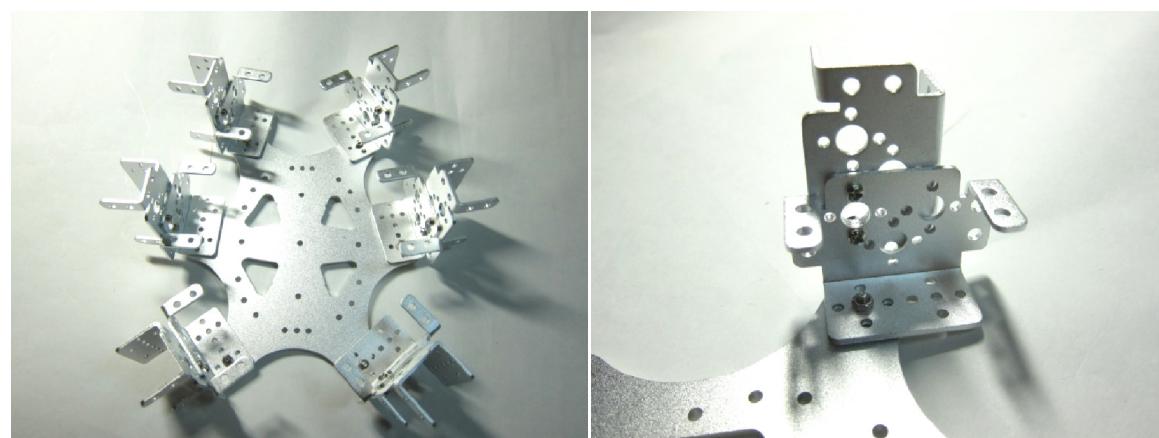
g. Place the cup bearing and screw to the plate as follow.



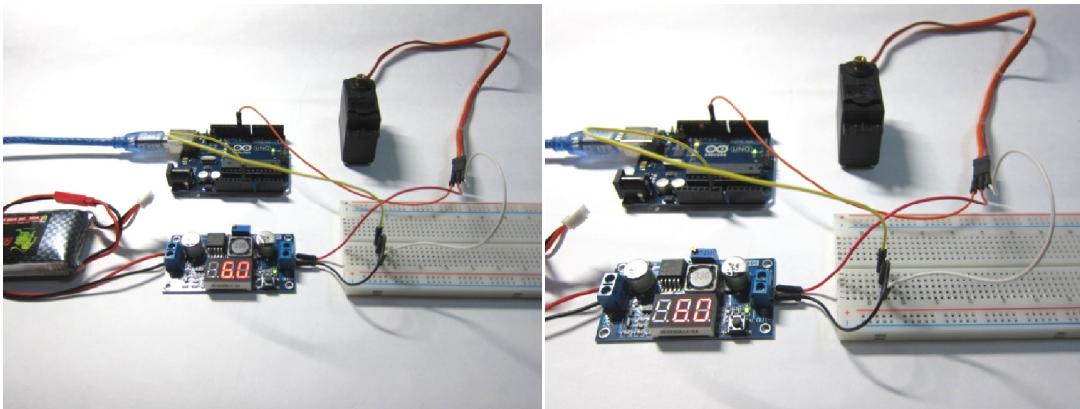
h. Fasten the part to the plate as follow. The rim of the cup bearing should be outward.



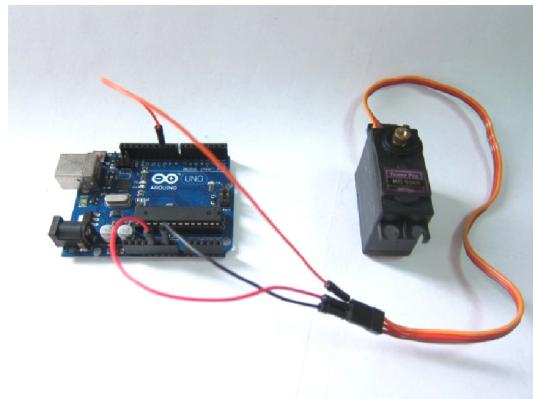
i. Assemble those parts to the plate in the same way. The three screws should be aligned vertically.



- j. For all servos it is recommended using external power source for calibration. Adjust the voltage to the range from DC 4.8V to 6V and connect the servos as follow. Brown wire to GND of the power source, red to + and orange to digital pin 10. Download Code for Servo Calibration from <http://www.elabpeers.com/spider-robot-silver.html> and upload it to Arduino board. Remember to connect GND on Arduino board to both GND on servo and power source.



- k. You may also calibrate MG996R servos with Arduino board directly, but the result is not as good as with external power source because of weaker current.



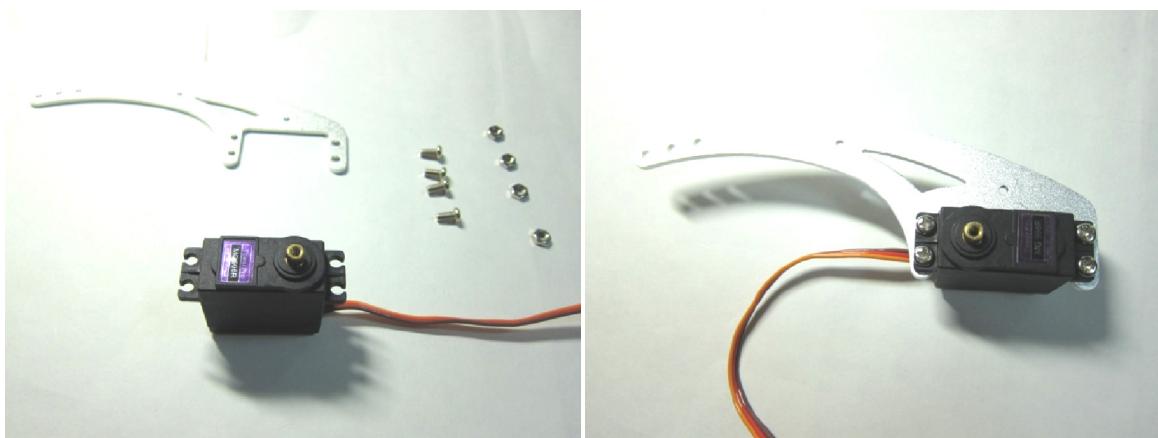
- l. Take one upper leg and M3 x 5mm screws.



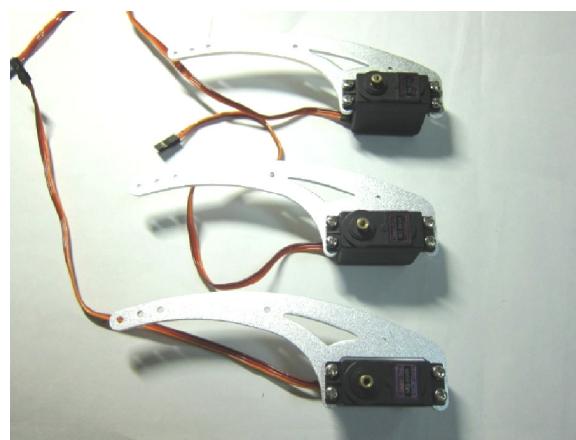
m. Fasten the servo wheels to upper legs with M3 x 5mm. Repeat this step six times.



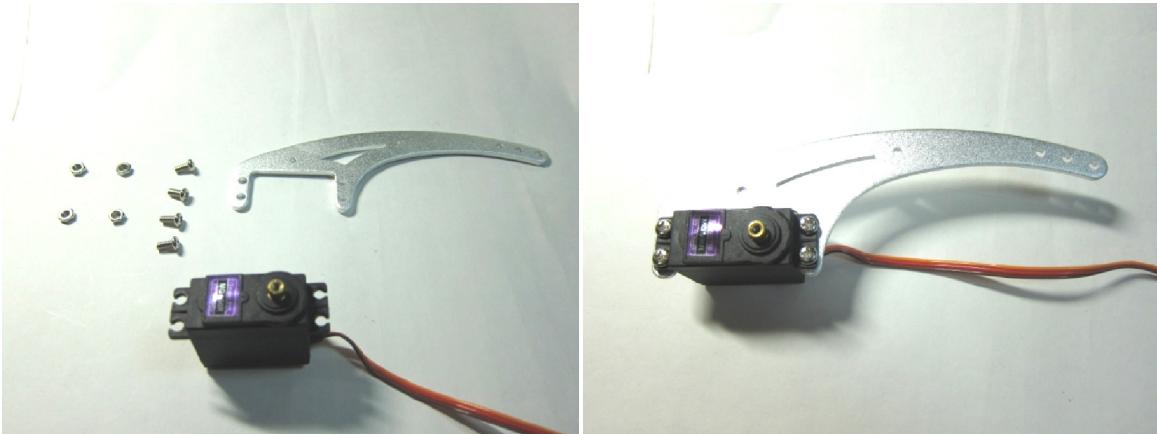
n. Pick one lower leg, a servo and 4 M4 x 8mm screws and nuts. Fix them together. (Pay attention to the direction of the servo)



o. Do the same step three times.



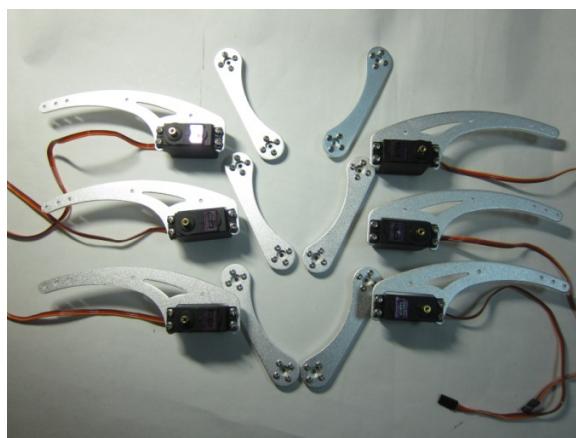
- p. Pick one lower leg, a servo and 4 M4 x 8mm screws and nuts. Fix them together in another way. (Pay attention to the direction of the servo)



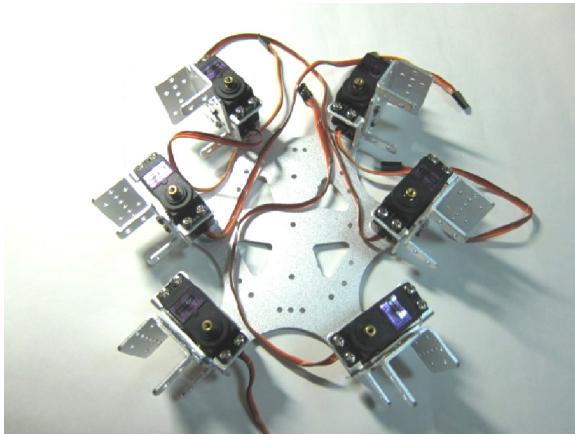
- q. Do the same step three times.



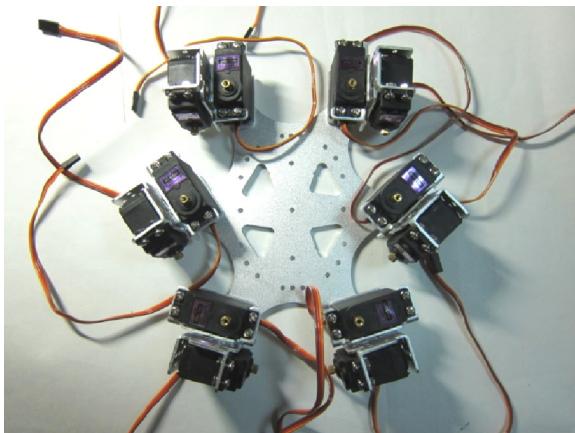
- r. Another view for all upper and lower legs..



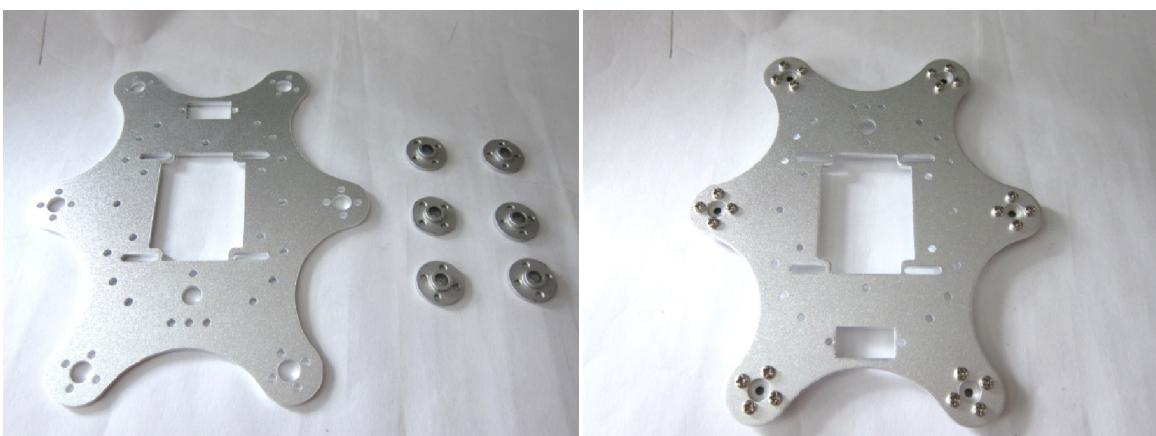
- s. Now fix 6 servos to the brackets on the plate as below. (Pay attention to the direction of the servos)



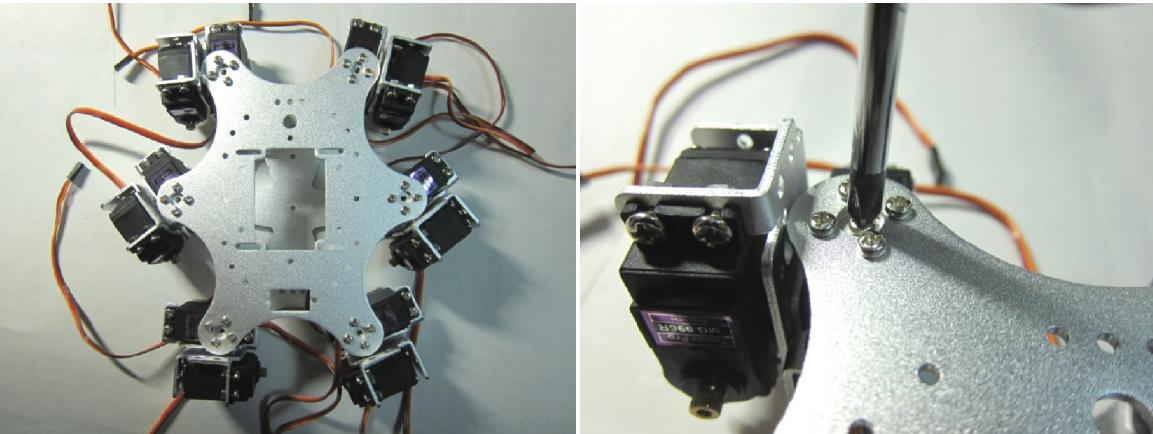
- t. Tighten another six servo to the brackets as follow. Note that the output splines on the servos should be at lower position.



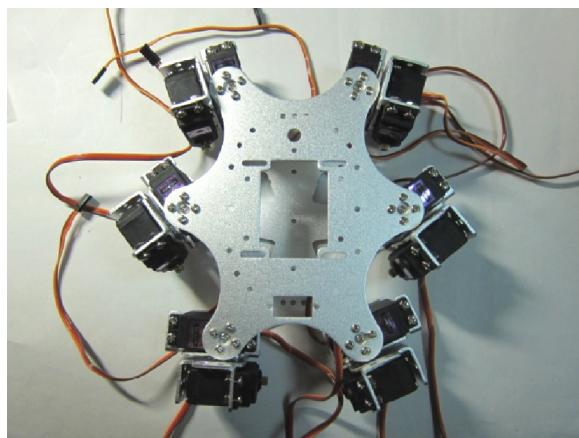
- u. Take another mounting plate and fasten six servo wheels with M3 x 5mm screws as follow. Leave the middle of servo wheels unfastened.



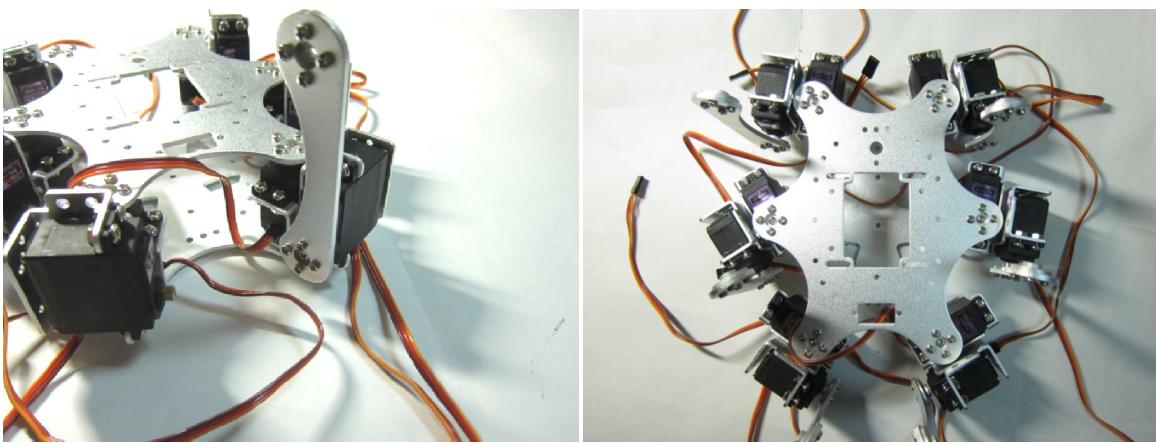
- v. Adjust the direction of servo brackets as below. Place the mounting plate on the servos. Fix the middle of servo wheels to the servos with 6 M3 x 5mm screws.



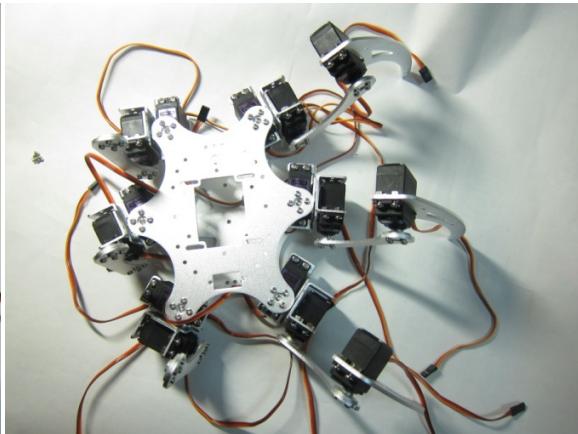
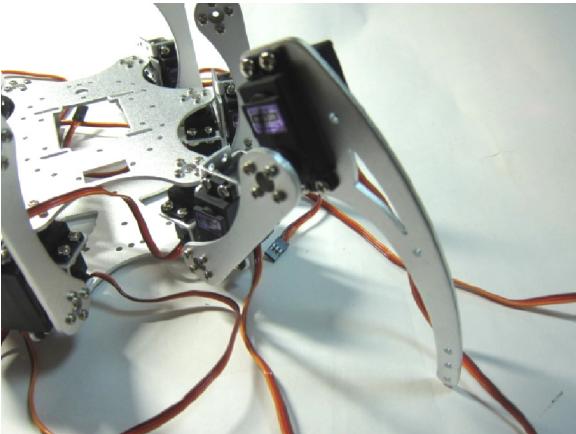
w. Another view.



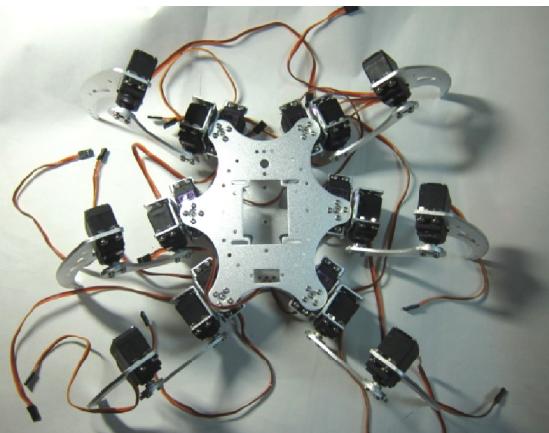
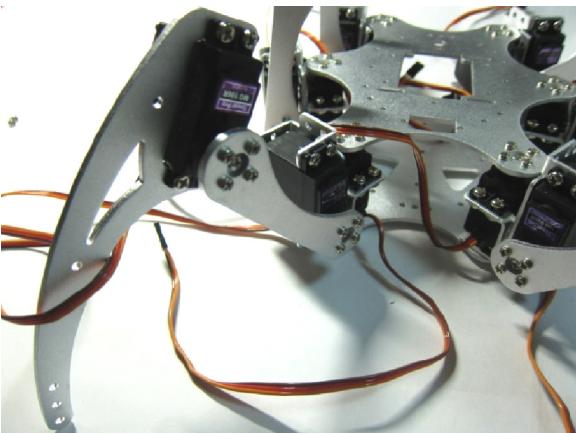
- x. Assemble an upper leg to a servo with M3 x 5mm screw. It should be fixed vertically and the curve side should be inward. Do the same step six times.



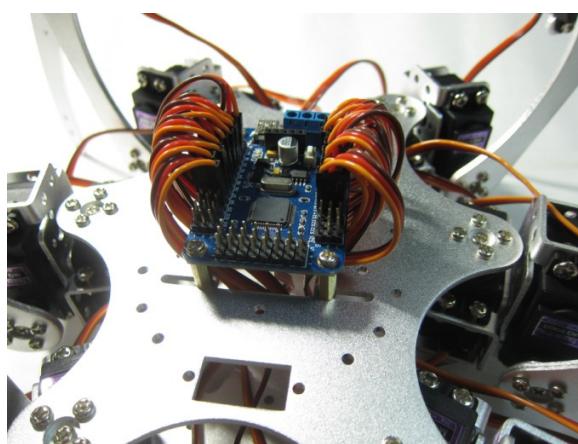
- y. Fix the lower leg with this servo position to the upper legs on the left body as follow.
Do the same step three times.

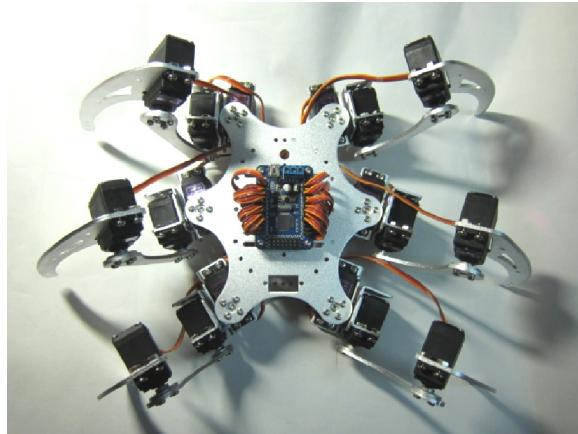


- z. Fix the lower leg with this servo position to the upper legs on the right body as follow.
Do the same step three times.



You may fasten a servo controller to the body as follow.





Finish. You may start doing testing now.

5. Troubleshooting:

- Make sure all directions and positions follow the instruction accordingly.
- All servos should be calibrated before installing to brackets.
- Nuts for M3 screws are the same.
- To avoid short-circuit, tighten metal / plastic standoff on the spider first before installing servo controller.
- If the servo wires are messy, bunching them with plastic cable ties.

6. Copyright:

- In order to design this low cost high value product which benefits lots of people or student, the original designer has spent days and nights to improve and create this new product.
- We hope the hardwork of the original designer would be respected.
- We encourage improvement and new ideas. However, direct copying the design is not only theft, but also kills future innovations.