Step 5 – Assembled robot

- Due Nov 9 by 11:59pm
- Points 100
- Submitting a file upload
- File Types pdf

The goal of this step is to print and assemble the entire robot. The robot does not yet need to walk, but all motors should be able to move.

3D-print all the robot modules including legs, body, etc. Assemble the entire robot using all components, bolts, screws cables, and mounts as described in the CAD. If you observe any problems, such as form and fit issues due to printer resolution, adjust the CAD. Validate stability, leg to leg interference, and other design assumptions. Address and correct any issues and reprint modules with issues addressed.

Present glamour photos of your printed robot in PowerPoint. Include side-by-side images of printed robot and detailed CAD. Show movie of moving robot. The Raspery PI, battery, and controller should be on board, and powering through on board battery and controlling through Raspberry Pi is a plus. Show a close-up of any issues and solutions.

Hand in:

A PowerPoint presentation of your printed robot. Include side-by-side images of printed modules and corresponding CAD. Show frame sequence of moving legs. Show close-up of any issues and explain how they will be addressed.

Append this assignment's slides to all previous slides from previous assignments. This assignment should be last, starting with a clear title slide. Save everything as a single PDF and upload the PDF. All movies should be shown as a representative video frame plus a link to a video online.

PowerPoint Format:

1. Page 1: Title slide: Robotics Studio MECE 4611, Semester, Assignment 5, Full name(s), UNI(s), Date/Time Submitted, Grace hours (before submission, used/gained, after submission), Title of robot, General robot Rendering
2. Page 2-X: Renderings as described above

Grading

Grading of this part is incremental. You get points for various aspects and the more you do the more you get. Maximum 100 points. Following are tentative rubrics you can receive points for:

1. 5 Points Title slide complete
2. 5 Points overall aesthetics, layout and formatting of the slides
3. 8 Points glamour photo of printed robot
4. 8 Points posting some video of the moving robot on Discussion Boarda (show screenshot, provide link)
5. 8 Points robot legs moving (frames shown + link to video)
6. 8 Points extreme leg interference tested and measured
7. 8 Points stability verified in various configurations
8. 8 Points form/fit issues identified and addressed
9. 8 Points all components properly bolted and connected
10. 8 Points 3D-print quality, support structure cleanly removed
11. 8 Points parts sanded and painted
12. 8 Points Robot modularity demonstrated
13. 8 Points Multiple configurations tested
14. 8 Points Cables routed properly and securely
15. 8 Points motors controlled directly from Raspberry Pi
16. 8 Points motors powered using battery
17. 8 Points overall aesthetics of the presentation
18. 8 Points Robot boot test routine implemented
19. 8 Points Robot homing routine implemented