Robotics,
Autonomous systems

Weekly Report N°6 for

School year 2023-2024

RubbleScout,

"Navigating Chaos, Saving Lives"

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Objectives:

- Present progress on RubbleScout to teachers.
- 3D print a prototype for the underside cover of the robot.
- Redesign the LiDAR module with a more compact layout and gear mechanism.

Activities Undertaken:

1. Presentation to Teachers:

- Conducted a brief, 5-minute presentation on the current status of RubbleScout.
- Highlighted key developments, challenges faced, and solutions implemented so far.
- Engaged in a Q&A session with teachers, gaining valuable feedback and insights.

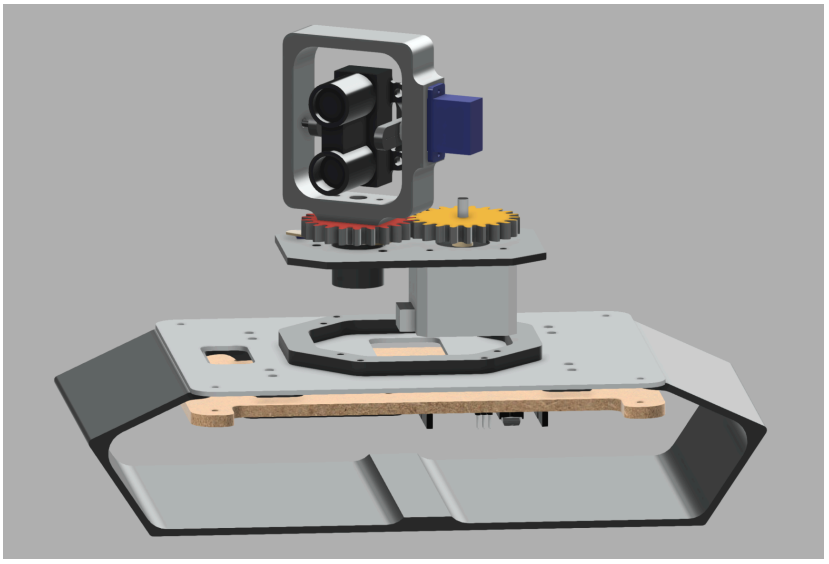
2. 3D Printing of the Underside Cover:

- 3D printed a test prototype for the part that will cover the underside ("belly") of RubbleScout.
- This test aimed to verify the fit and practicality of the design in real-world applications.

3. Redesign of LiDAR Module:

- Based on insights from previous tests and ongoing learning, created a new, more compact design for the LiDAR module.
- Transitioned from a belt-driven mechanism to a gear system, enhancing efficiency and reliability.

-This new design can be found [here]. Note that the design is not yet compatible with RubbleScout chassis.



Results and Observations:

- Presentation Feedback: Received constructive feedback from teachers, which will be instrumental in further refining the project. The questions raised during the session provided new perspectives for consideration.

- Underside Cover Prototype: The 3D printed prototype confirmed the viability of the design. Minor adjustments may be needed for perfect alignment and attachment.

- LiDAR Module Redesign: The new gear-driven LiDAR module design is more compact and mechanically efficient than the previous version. This redesign is expected to improve the scanning performance of the robot.

Next Steps:

- Incorporate the feedback from the presentation into the project development plan.
- Make necessary adjustments to the underside cover based on the test print results.
- Proceed with the fabrication and testing of the new LiDAR module design.
- Plan for further functionality tests and refinements in the coming sessions.

Reflections:

This session was instrumental in validating the design direction and gathering external input. The hands-on testing with 3D printing and the LiDAR module redesign showcased our adaptive approach to problem-solving and optimization in robotics design.