

# **Weekly Report N°7 for**

*School year 2023-2024*

**RubbleScout,**  
*"Navigating Chaos, Saving Lives"*

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## Objectives:

- 3D print and assemble the various components for the LiDAR module.
- Prepare for the next steps: wiring, programming, and testing the LiDAR system, with a focus on data storage and visualization.

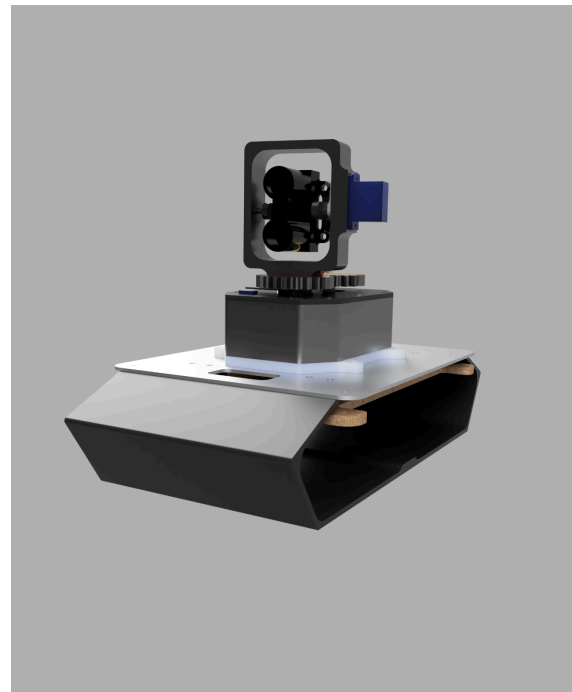
## Activities Undertaken:

### 1. 3D Printing of LiDAR Components:

- Completed the 3D printing of all necessary parts for the LiDAR module, ensuring precision and quality for optimal functionality.

### 2. Assembly of the LiDAR Module:

- Assembled the printed parts, creating the full LiDAR module with attention to component fit and structural integrity.

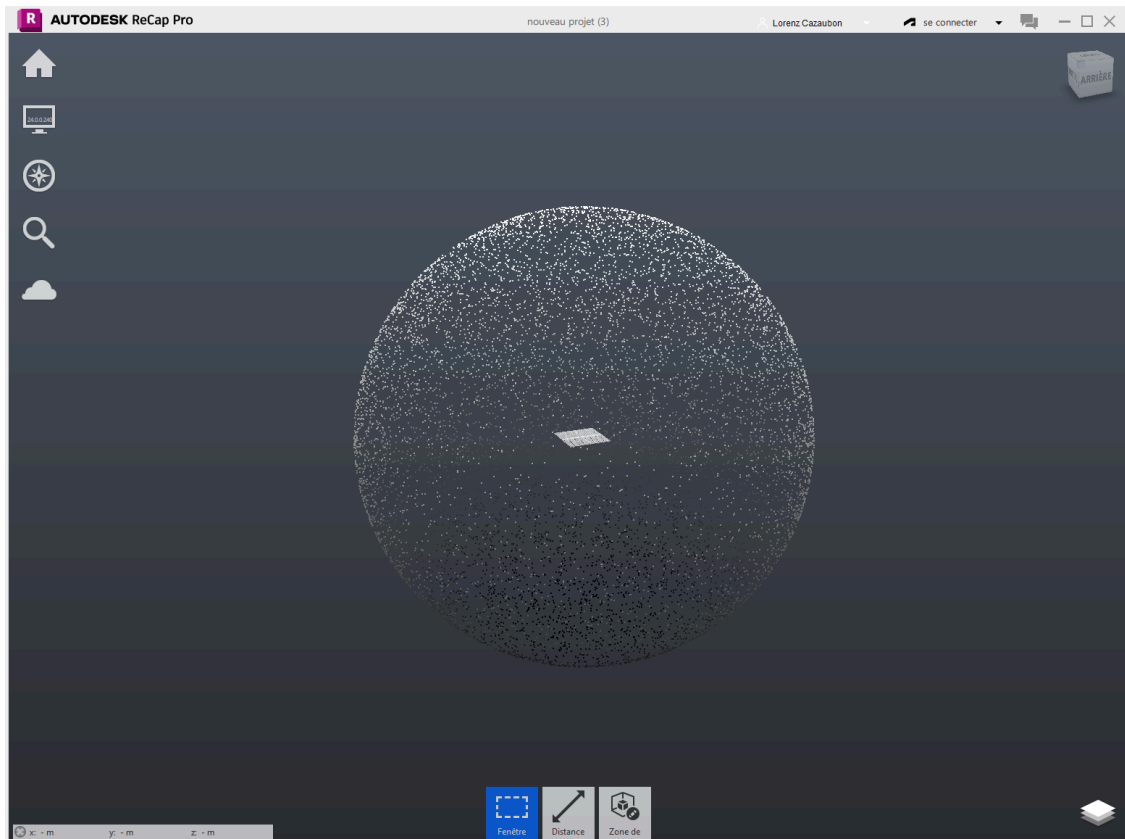


### 3. Data Storage and Visualization Planning:

- Planned for the 3D mapping data to be saved initially as a .txt file on an SD card.
- Arranged to use Autodesk Recap on a computer to open and view the point cloud data generated by the LiDAR.

### 4. Preliminary Testing with Sphere Mapping:

- Conducted a test by creating a .txt file of the coordinates of a sphere using a C++ code. The code and .txt file can be found in the github folder.
- Successfully imported this data into Autodesk Recap to visualize the point cloud, confirming the feasibility of this approach for LiDAR data visualization.



### Results and Observations:

- **LiDAR Module Assembly:** The module was assembled successfully, with all components fitting well together. It's now ready for electronic integration.
- **Visualization Test:** The successful import of point cloud data into Autodesk Recap demonstrates the potential for effective visualization of LiDAR's 3D mapping data.

### Next Steps:

- **Wiring and Electronics:** Proceed with wiring the LiDAR module and integrating it with the robot's electronics.
- **LiDAR Programming:** Develop the necessary code for the LiDAR's operation, ensuring it can save mapping data to an SD card.
- **Comprehensive Testing:** Thoroughly test the LiDAR module, focusing on its scanning accuracy and the efficacy of data storage and visualization using Autodesk Recap.

### Reflections:

This session has been pivotal, not just in the physical construction of the LiDAR module, but also in validating our approach to data handling and visualization. The ability to visualize the environment accurately is as crucial as the ability to navigate it. The next steps will be crucial in bringing the LiDAR's full capabilities to life.