Advisor: Lale Alatan

RALAZABA ELECTRONICS

8th Weekly Report

Team Members: Ali AYDIN, Anıl AYDIN, Enes AYAZ, Nail TOSUN, Selman DİNÇ

Activities completed this week

In this week, test planes of the mapping surface are created for further test of ROS and path assignment. The test planes are created using real-measurements of the objects and the boundaries. For this purpose, the following objects that will present in the mapping area are sampled by using the module that created two weeks ago.

- **Boundary consists of 12 plates of 500mm long.**
- **Cylinders of 10 cm diameter.**
- **Cylinders of 5 cm diameter.**
- **Square prisms with 7 cm edge length.**
- **Prisms with an equilateral triangular base of 8 cm edge length.**

The measurements for boundary plates are taken such a way that the sampling device is placed 500mm away from the surface. The obtained result is given in Fig 1.1.

Fig 1.1. Single sampling measurement for one of the 0.5m plates.

For the cylinders, four different measurements with 90-degree-separation are taken from 150mm away. In the same manner, the measurements for the prisms are taken from its corners and edges. The resultant measurement are shown in Fig 1.2 and Fig 1.3.

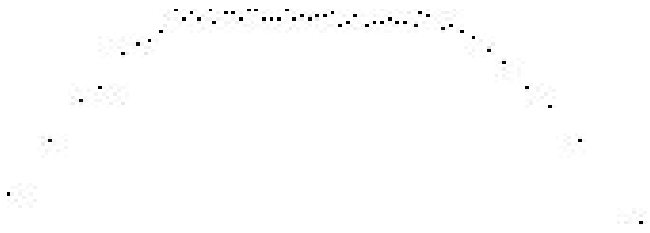

Fig 1.2. The measurement for the edge of the square prism.

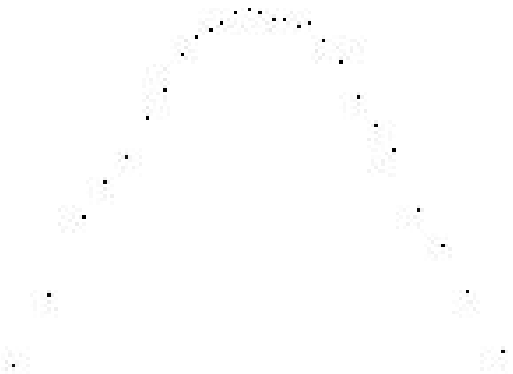

Fig 1.3. The measurement for the cylinder of 5cm diameter .

Using the obtained data, the objects are transformed to matrix format in MATLAB environment. The matrix are 1 mm resolution in real world dimensions. After rearranging, manipulation and reconstruction of the real-world measurements, the matrix form of the intended mapping environment is created for testing purposes. They will be presented during DS Meeting.

However, the data consists of the point sampling of the environment. Since this measurement technique limits the use of the data, we created the meshed data of the point data. After meshing the data we obtained the result in the Fig 1.4.

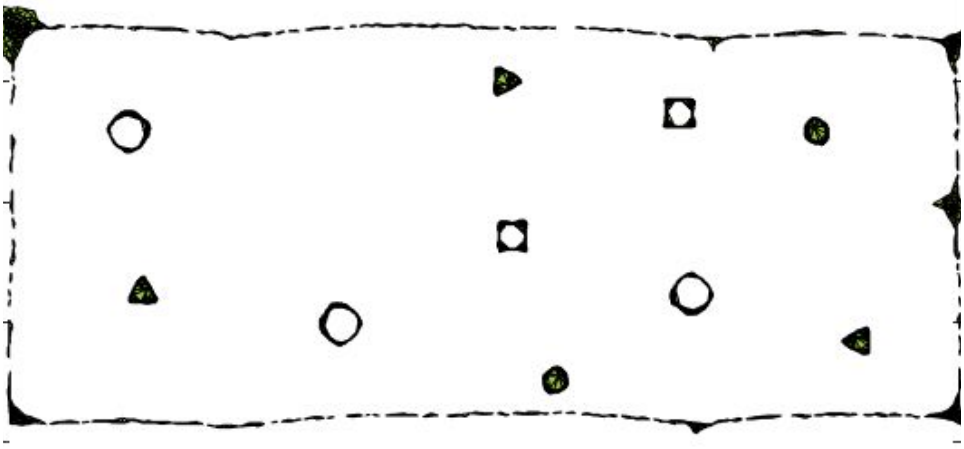

Fig 1.4. The meshed data of the environment.

By doing so, the walls of the boundary and the objects will be detected easily by the future algorithms In Fig 1.4, the matrix is transferred to image array with resolution of 1 mm square pixel size.

Future Activities

- We will search ROS and GAZEBO.
- We will begin writing conceptual design,