

## ***ABSTRACT***

Mapping is one way that is used to get the information to describe the shape of face of the earth. It can be illustrated through a general map of color or a special map such as a contour map. However, to do the mapping, we need collections of data obtained from measurement or sensing.. In this research the author used ultrasonic sensors to do contour mapping on a miniature. The type of ultrasonic sensor used is the SRF-05 ultrasonic.

In mapping, firstly ultrasonic's sensor measures the distance of the surface in a miniature, the ultrasonic sensor is placed on the top of the miniature and will move horizontally towards the x and y axes automatically. In each movement position, the sensor will transmit the wave signal and the reflected signal received. The reflected signal obtained is converted into a distance value first, and then processed by raspberry pi, then the results obtained will be displayed Graphical User Interfae (GUI) in the form of contour maps. The system that will be designed is the first step to designing or conducting research on sonar.

As the result of this research, a contour map was obtained from 3 areas, namely without object area, 2 objects area, and heterogeneous area with vertical and horizontal ultrasonic positions and the time needed 7 - 8 minutes for a single scan. From the test results obtained the accuracy value for areas without object with horizontal ultrasonic position is 0.0061728395, for 2 objects areas with vertical ultrasonic positions are 0.0935672515 and for heterogeneous areas with horizontal ultrasonic position is 0.1296296296.

**Keywords:** ultrasonic, mapping, GUI