

ABSTRACT

Simultaneous Localization and Mapping (SLAM) is a technique for exploring and mapping unknown environments and estimating the position and orientation of the mobile sensor itself using sensors installed on the mobile sensor. This is the main technology used as the assignment of mobile sensors in carrying out a navigation system from one point to the destination.

In this research, mobile sensors are made that have the ability to explore the environment that has not been previously known with the mapping process and most importantly, the mobile sensor must perform localization process of mobile sensors to find poses (position and orientation) in the kartesian coordinates. For this reason, the Adaptive Monte Carlo localization (AMCL) method is used by using a mapped environment, using Bayesian probability and using a representation of the Particle filter to estimate poses (position and orientation). The final step is the mobile sensor to navigate automatically to the point where there is a gas leak.

With the SLAM process, the mobile sensor can mapping the entire operating environment and can find position in the environment with the AMCL process so that the navigation system process can be carried out gas leak point. Mobile sensors that have been made can navigate to the point of gas leakage with a success rate of 90%.

Keywords : SLAM, AMCL, ROS, *pose,,particle filter dan Mobile sensor.*