

ABSTRACT

One of the modern technologies today is object detection using Light Detection and Ranging (LiDAR) sensors. LiDAR uses laser beams, typically ultraviolet and infrared rays. Accurately identifying the presence of humans is crucial in applications such as autonomous navigation and human-robot interaction in robotics. This research aims to detect humans based on foot patterns in 2D LiDAR data using the Circular Fitting method. The Circular Fitting method in this study achieves its objective by combining various methods, such as segmentation using the K-Means Clustering algorithm algorithm to group data points with similar characteristics, such as human foot patterns, into clusters. Additionally, a Bounding Box is used to locate objects in the 2D LiDAR data. The Circular Fitting method is used in this research because it can provide a circular representation that fits the human foot pattern. The data collection process includes 2D LiDAR scanning data, detected object data, and validation data. The result of the clustering in this research is data points that represent human objects distinct from other objects. This study with used circular fitting method provides an effective solution to the problem of detecting human foot patterns. Additionally, it is expected to serve as a foundation for developing more effective and accurate human foot pattern detection.

Keywords: *Circular Fitting, LiDAR 2D, Foot Pattern, Data Points.*