

## ABSTRACT

*Food is a vital element for growth. Production and management are the main challenges for the development, survival, and maintenance of aquaculture. Several direct and indirect methods have been invented, one of which is an automated device such as an autonomous vehicle to deliver a chow to fish. But accidents are possible on unmanned vehicles. Thus we need a technology that can minimize accidents by unmanned vehicles.*

*According to a study published in the Physics Journal, Study on Automatic Collision Avoidance System and Method for Evaluating Collision Avoidance Maneuvering Results, around 80% of ship crashes are related to human error or “lack of situational awareness.” One approach of preventing collisions due by “lack of situational awareness” is to utilize a system that continually captures the risk level of collisions with ships encountered. As a result, in this final project, a marker detection system on a fish feeder was constructed for simple computer vision-based collision avoidance.*

*The end result of this project is a marker detection system for collision avoidance on a fish feeder using computer vision technology. With the camera FoV is 56.14°. When the camera recognizes the existence of a marker, collision avoidance happens. However, illumination remains a significant role in the camera's ability in identifying markers.*

**Keywords:** *Computer Vision, Detection, Collision Avoidance, OpenCV, C++*