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Computer Vision Application in Measuring Fish Length

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Abstract

This paper demonstrates the application of computer vision in marine technology, vis-à-vis, producing a 3D model from the fish image data. In many parts of the world, especially in Malaysia, measuring the fish length helps identify the fish species population for the purpose of fish reproduction, recruitment, growth and mortality study. The current method of fish length measurement requires measuring of each fish physically using one of the traditional measuring tools like a measuring tape. The main disadvantage of this method is its time consuming, costly and inaccurate. This paper presents a new method for measuring fish length using camera vision technology. In this method, we used different types of camera to produce digital images as input data for identifying the length of fish and using Hsu's Method for more detailed analysis in the study. The results of this experiment will define a new method of fish measurement using computer vision.

Keywords: Computer vision application, fish length measurement, image processing, marine technology

1. Introduction

There are diverse applications of computer vision from robotics and security surveillance systems to medical imaging/object modeling and information organization. We chose the application of computer vision in the marine technological study to fulfill the demands and lack of research efforts much needed by countries well dependent on fish as another source of income to the nation including Malaysia.

In many countries such as the above, the Fishery performance indicators require continuous information for their determination as the fishery, its parameters, as well as management objectives vary over time. This information is derived from data that need to be collected and analyzed. Firstly, they provide a structured approach through a sequential pathway (*see Figure 1*), from the understanding of why data are needed, through what data need to be collected, to how data should be collected [1].

Fisheries policy and management objectives need to be based upon analyses of *reliable data*. Policy and management issues can be broadly divided into food security, socioeconomic and environmental concerns, each of which needs certain types of information for decision-making. While the precautionary approach could be used when information is insufficient, management in general