

**Abstract**

The catfish farming industry is growing rapidly but faces challenges in counting catfish seeds accurately and efficiently. This research develops a catfish seed counting system using digital image processing technology based on the Otsu Thresholding method and template matching, integrated in a web application using the Streamlit framework. Otsu Thresholding was chosen because of its ability to automatically separate objects from the image background by optimizing the threshold, while template matching clarifies the identification and counting of catfish seeds by matching the image with a predetermined template. The test results show that a threshold of 0.55 gives an RMSE value of 8.61. Testing four calculation methods shows the application has the fastest average time of 3 seconds 248 milliseconds with an RMSE of 3.50. Background testing shows the white background produces the lowest RMSE of 4.98, and light quality testing shows light quality 3 has the lowest RMSE of 0. Additionally, image quality 3 produces the lowest RMSE of 2.24. These systems offer advantages in accuracy, processing speed and ease of use, and provide output that can be directly accessed and further processed in digital format.

**Keywords:** Digital Image Processing, Otsu Thresholding, Template Matching, Catfish Farming, Streamlit.

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