

## ABSTRAK

Perkembangan teknologi *computer vision* berkembang dengan sangat cepat dan merambah dalam segala sektor, diantaranya perikanan. Penelitian ini berfokus mendeteksi dan menghitung anakan ikan lele. Penelitian ini bertujuan untuk menerapkan *deep learning* dalam mendeteksi objek anakan ikan lele dan menghitung secara akurat sehingga membantu petani dan pembeli mengurangi resiko kerugian. Sistem deteksi pada penelitian ini menggunakan teknik pengolahan citra digital sebagai cara untuk mendapatkan informasi dari objek deteksi. Metode penelitian menggunakan YOLO *Object Detection* yang memiliki kemampuan sangat cepat dalam mengidentifikasi objek. Objek yang dideteksi sebuah objek anakan ikan lele yang diberi *bounding box* dan label deteksi menampilkan nama *class* dan nilai *precision*. Dataset berjumlah 321 berupa gambar objek anakan ikan lele dari sumber internet dan fotografi yang ditraining menghasilkan model baru citra digital. Jumlah split dataset training, validasi dan testing masing masing bernilai menjadi 655 gambar training, 83 gambar validasi dan 83 gambar untuk proses testing. Nilai model training mAP 68 %, Precision 72 % dan Recall 64 %. Hasil pengujian deteksi berdasarkan metode YOLO diperoleh tingkat akurasi 74.7 %. Berdasarkan hasil pengujian yang dilakukan dengan jumlah objek 50 ekor hingga 500 ekor ukuran 2-8 cm menggunakan video, objek pada citra berhasil dikenali dengan akurasi 63% sampai 70%. Perhitungan menggunakan algoritma YOLO menunjukkan hasil yang cukup baik.

**Kata Kunci :** Computer Vision, Image Processing, YOLO, Deep Learning, Artificial Intelligence

## ABSTRACT

The development of computer vision technology is growing very fast and has penetrated all sectors, including fisheries. This research focuses on detecting and counting catfish fry. This research aims to apply deep learning to detect and count catfish fry accurately to help farmers and buyers reduce the risk of loss. The detection system in this research uses digital image processing techniques as a way to obtain information from the detection object. The research method uses YOLO Object Detection which has a very fast ability to identify objects. The object detected is a catfish puppy object that is given a bounding box and the detection label displays the class name and precision value. The dataset amounted to 321 images of catfish fry objects from internet and photography sources that were trained to produce a new digital image model. The number of split training, validation and testing datasets is worth 655 training images, 83 validation images and 83 images for the testing process. The value of the training model mAP 68%, Precision 72% and Recall 64%. Detection test results based on the YOLO method obtained an accuracy rate of 74.7%. Based on the results of tests carried out with the number of objects from 50 heads to 500 heads 2-8 cm in size using video, objects in the image were successfully recognized with an accuracy of 63% to 70%. Calculations using the YOLO algorithm show quite good results.

Keywords: Computer Vision, Image Processing, YOLO, Deep Learning