

## Fish Fin Evaluation Using a Convolutional Neural Network: A Pilot Study

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Fish fin promises to be a valuable non-invasive welfare indicator especially in aquaculture. Fin damage is a broad term that includes fin erosion and other abrasions. Fins that help make these important decisions are mainly the dorsal fin, caudal fin and anal fin. This article reports on the preliminary findings of a pilot study on evaluating fish fin damage using a convolutional neural network.

Keeping track of fish health is a challenging task, with one critical aspect being the assessment of fish fin. To achieve this objective, video data of pikeperch fish in an aquarium was collected, followed by image extraction and annotation (assigning a class to the part of the fin of interest by putting that part in a box). The annotated dataset was then used to train a Convolutional Neural Network (CNN) to see the learning performance.

Results from the learning performance revealed that improving the dataset and adjusting certain classes could help achieve exceptionally significant precision (how the CNN model can identify the correctly identify a fin part), recall (how the model is able to identify all the correct instances), and F1 scores (how the precision and recall balances).

These findings underline the potential of deep learning methods in automating aquaculture health assessment.

### Source of the Abstracts

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