COSE474-2024F: Final Project Proposal
Classification of Commonly Consumed Fish

Sung Jin Kim 2022320128

1. Introduction

Automated classification of fish by species could allow for applications such as automated fishing, monitoring illegal fishing practices, and assistance in recreational fishing.

2. Problem definition & challenges

There are several challenges that may make it hard for general image classification models to correctly identify the species of fish. First, the visual similarity between species can be high, especially among closely related species of fish. Secondly, there are several environmental conditions that may lead to misclassification, such as the lighting, water visibility, and the life stage of the fish. Lastly, the limited availability of labeled data on lesser known types of fish can pose a significant challenge to general models that have shallow data on the subject.

3. Datasets

The dataset being used is "Fish Dataset" on kaggle, a dataset of 13,304 images that contain 31 different fish species that can be found at the Marinig Fishing Port in Cabuyao City. This dataset will be used to fine-tune a pre-trained CLIP model which will hopefully have a higher classification accuracy than the baseline CLIP model. (Lampa et al., 2022)

4. State-of-the-art methods and baselines

A simple image registration technique based on shape and texture was able to achieve a 76% training accuracy on haddock, cod, and whiting. (Larsen et al., 2009)

A deep convolutional neural network OFDNet was able to obtain a 89.7% test accuracy on classifying commercial herring and mackerel. (Christensen et al., 2018)

5. Schedule

Until 11/15: Train the model

Until 11/30: Assess test accuracy and finish report

References

Christensen, J. H., Mogensen, L. V., Galeazzi, R., and Andersen, J. C. Detection, localization and classification of fish and fish species in poor conditions using convolutional neural networks. In *2018 IEEE/OES Autonomous Underwater Vehicle Workshop (AUV)*, pp. 1–6, Porto, Portugal, 2018. IEEE. doi: 10.1109/AUV.2018.8729798.

Lampa, M. D., Librojo, R. C., and Calamba, M. M. Fish dataset, 2022. URL https://www.kaggle.com/dsv/4323384.

Larsen, R., Olafsdottir, H., and Ersbøll, B. K. Shape and texture based classification of fish species. In Salberg, A., Hardeberg, J., and Jenssen, R. (eds.), *Image Analysis*, volume 5575 of *Lecture Notes in Computer Science*, pp. 745–749. Springer, Berlin, Heidelberg, 2009. doi: 10.1007/978-3-642-02230-2_76. URL https://doi.org/10.1007/978-3-642-02230-2_76.