Fish Classification

Abstract

The goal of this project was to use deep learning techniques to correctly classify fish images. This project was started in hopes to help anyone needing to classify fish accurately from any image. Some example uses of the project could be for game wardens to correctly identify fish by submitting their own test images to the model or for dietitians to identify a fish and look up nutritional information to build a meal.

Design

This project was something I wanted to do when I found a nice dataset of fish images because I have always been intrigued by image classification. In the modern world many applications of this technology are becoming relevant (such as airport facial recognition, self driving cars, etc) and I think that more hands-on jobs (like fish and wildlife jobs) should not be left out of having that type of technology.

Data

This dataset contains 9,000 images of 9 different fish species.

https://www.kaggle.com/datasets/crowww/a-large-scale-fish-dataset

Algorithms

- Python Neural Network libraries (keras)
    - Sequential and Functional Models
    - Transfer Learning

- Logistic Regression
    - Dimensionality Reduction

Tools

- Numpy for image manipulation
- Scikit-learn for modeling/image processing
- ImageDataGenerator for image processing
- Matplotlib for plotting
- Keras for Python neural network
- GoogleColab for neural network training

Communication

A five minute Google Slides presentation displaying my findings.

The project will be displayed on Github as well.