CSC4240 - Final Project Proposal

Animal Classification

Carlos Escudero Hunter Evans Brian Lee Drew Wheeler Robert Zheng

Topic

We decided to create a ML agent that can distinguish between four animals, such as buffalo, elephant, rhino, and zebra. We will feed the agent images of those animals as a knowledge base and train it to produce the correct classification when given a previously unseen image of an animal.

Data Source

We have opted to source the following dataset from Kaggle as the one for this project:
[Animal Classification by Ayush Verma]

Machine Learning Algorithms

The machine learning algorithms we intend to use are Convolutional Neural Networks (CNNs) and Support Vector Machines (SVMs). CNNs lend themselves well to image recognition tasks. They are designed to automatically and adaptively learn the spatial hierarchies of features from image data. SVMs are a class of robust and effective algorithms for classification tasks. When combined with other image feature extraction techniques, they are a powerful tool for image classification. In comparison, CNN represents a deep learning approach, which is inherently more complex but potentially more accurate, especially with large and diverse datasets. On the other hand, the SVM with feature extraction serves as a more traditional machine learning approach, which can be faster to train on smaller datasets and can serve as a good benchmark to understand the value added by deep learning. We opted for these algorithms to evaluate how classical and layered machine learning algorithms produce classifications.

Roles

Data Engineer	Carlos Escudero
Feature Engineer	Drew Wheeler
Model Developer	Robert Zheng
Validation and Testing Specialist	Hunter Evans
Project Manager and Documentarian	Brian Lee