ANIMALS 10

Adi Megidi and Shaked Yudkovich

THE DATA

- 28K medium quality animal images
- 10 categories: dog, cat, horse, spyder, butterfly, chicken, sheep, cow, squirrel, elephant.
- object classification
- Images split into train and test sets.
- Batches of 32 images

BASE LINE

BASE LINE

- The model always predicts the most frequent class from the training data.
- The model serves as a baseline for comparison with more complex models.
- accuracy : 10%

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Total Correct Predictions: 519
Total Predictions: 5245
Accuracy: 9.90%
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SIMPLE SOFTMAX REGRESSION

- The model uses softmax regression to classify images into one of the predefined categories.
- The model is trained on features extracted from the images, which are flattened and normalized.
- The images are resized to a fixed size of 64x64 pixels.

LOGISTIC REGRESSION

LOGISTIC REGRESSION

- This part creates a logistic regression model with preprocessing (scaling) and hyperparameter tuning using GridSearchCV to improve accuracy.
- The model is trained in batches, and performance is evaluated using accuracy, precision, and recall metrics.
- accuracy: 27%

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Logistic Regression Performance:
Accuracy: 0.27
Precision: 0.27
Recall: 0.27
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CNN

CNN

- The images are resized to a fixed size of 150x150 pixels.
- 3 convolutional layers with ReLU activation for feature extraction.
- 3 max pooling layers for spatial downsampling.
- 1 flattening layer to convert 2D feature maps into a 1D vector.
- 2 dense layers: one with ReLU activation and the other with softmax activation for classification.
- The model was trained for 5 epochs.
- accuracy : 60%

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Precision: 0.9806, Recall: 0.9643, Accuracy:0.6078
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VGG

VGG

- Pre-trained on ImageNet (1.2M images)
- Flatten layer added to convert feature maps into a 1D vector
- Dense layer with softmax activation (10 neurons for classification)
- 5 epochs with Adam optimizer and sparse categorical crossentropy loss
- accuracy : 82%

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Precision: 0.9905, Recall: 0.9936, Accuracy:0.8242
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THANK YOU