Custom Image Classification Dataset & Model for Animal Recognition

Course Code & Section: [Cse445.3]
Project Group No.: 1
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Introduction

- - Create a custom dataset with 5 animal classes (Dog, Cow, Cat, Lamb, Zebra)
- - Collect 100 images per class (from the internet or phone)
- - Develop a model with at least 90% classification accuracy

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Significance

- - Automates animal classification
- - Custom dataset makes it adaptable
- - Useful in agriculture, veterinary AI, and animal monitoring

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Dataset Collection

- - 100 images per class (Total: 500 images)
- - Sources: Google Images, Unsplash, Phone
- - Organized into 5 labeled folders

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Data Preprocessing

- - Resized to 224×224 pixels
- - Normalized pixel values (0-1)
- - Applied augmentation (rotation, flipping, cropping)

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Tools & Libraries Used

- - TensorFlow/Keras (Model Training)
- - OpenCV (Image Preprocessing)
- - NumPy & Pandas (Data Handling)

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Model Development - Initial Approach

- - Implemented CNN model
- - Achieved 85% accuracy initially
- - Challenges: Overfitting, class imbalance

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Next Steps for Improvement

- - Use transfer learning (VGG16, ResNet)
- - Improve hyperparameter tuning
- - Apply cross-validation for better generalization

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Evaluation Metrics

- - Accuracy, Precision, Recall
- - Test on validation set
- - Optimize model based on performance

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GitHub

- https://github.com/FahimMuntashir/animal-classifier

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Conclusion

- - Target: Achieve 90% accuracy
- - Future Scope: Expand dataset, enhance augmentation, deploy as web app
- - Teamwork: Continuous collaboration & improvement

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References

- 1. A. Krizhevsky, I. Sutskever, & G. E. Hinton, ImageNet Classification with Deep CNNs (2012)
- 2. TensorFlow Documentation: Image Classification Tutorial

Q&A

- Any Questions?
- Thank You!

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