Ahmedabad University

CSE 623: Machine Learning Theory and Practice

Weekly Report 2

Section Number: 1

Group: 7

Submitted to faculty: Prof. Mehul Raval

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Work Done This Week

Dataset and Literature Review:

- Extended our research on the UAV imagery dataset referenced in Desai et al. (2022).
- Also we came through the dataset details (88,000 images from 143 individuals across 19 locations) given in the UAV imagery

Model Comparison Research:

- Focused on comparing various traditional machine learning models for feature-based classification.
- Viewed some strengths and limitations of SVM, Random Forest, and k-NN scripts.
- Prepared a detailed comparison table outlining each model's pros and cons for our project needs.
- Deep learning models applied: Convolutional neural networks for identifying dorsal scute patterns of the mugger crocodiles. Also we saw the 2 models of YOLO-V5I and Inception-V3 for bounding box detection and feature classification for elimination of noise.

Dataset Acquired:

- Searched for the actual dataset from the Dryad repository and searched further for performing some preprocessing like the image cleaning, annotation review, and feature extraction.

Implementation of Feature Extraction:

- Searched further for the extracting features from the dorsal scute patterns of mugger crocodiles using libraries and openCV for frame extraction.

Feature extraction and object detection process:

⇒ Also, go through the YOLO for image division in grids and bounding boxes prediction for individual crocodile detecting.

⇒ Searched further for visualization of image regions and Grad CAM method for the classification.

Image preprocessing:

In this we saw annotation of images using Labellmg for annotating bounding boxes and also data augmentation.

⇒ Also, we are planning to do some more reading of research papers and implement some models based on our topic.