Ahmedabad University

CSE 623 Machine Learning Theory and Practice

Weekly Report 2

Section Number: 1

Group 7.

Submitted to faculty: Mehul Raval

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2021-2022 (Monsoon Semester)

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Work Done This Week

Dataset & Literature Review:

- Extended our research on the UAV imagery dataset referenced in Desai et al. (2022).
- Examined dataset details (88,000 images from 143 individuals across 19 locations) and reviewed relevant research on mugger crocodile identification.

Model Comparison Research:

- Focused on comparing various traditional machine learning models for feature-based classification.
- Reviewed strengths and limitations of SVM, Random Forest, k-NN, and XGBoost for our application.
- Prepared a detailed comparison table outlining each model's pros and cons for our project needs.

Project Approach Development:

- Developed the approach section for our project, detailing data preprocessing, feature extraction (using HOG, SIFT, ORB, LBP), and model training strategies.
- Created draft slides (Slides 4-7 of Mid Sem Presentation Slides) that outline our dataset discussion, model selection process, and future work plans.

Work To Be Done Next Week

Dataset Acquisition & Preprocessing:

- Obtain the actual dataset from the Dryad repository and perform initial preprocessing (image cleaning, annotation review, feature extraction).

Implementation of Feature Extraction:

- Develop and test scripts for extracting features from the dorsal scute patterns of mugger crocodiles using OpenCV and other libraries.

Preliminary Model Training:

- Set up a framework to train and compare SVM, Random Forest, k-NN, and XGBoost models on a small sample of the dataset.
- Begin evaluation using cross-validation and standard performance metrics (accuracy, precision, recall, F1-score).

Refinement of Project Approach:

- Incorporate feedback on our model comparison and adjust the future work plan accordingly.
- Update presentation slides as necessary to reflect the latest progress and planning.