Project Weekly Report - 3

Project definition: Machine Learning-Based Approach for Automated Biometric Identification of Mugger Crocodiles

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⇒ **Started working on the project:-**

⇒ Here, we searched for the HOG, SIFT, ORB and LBP.
In this week, we gathered the dataset of mugger crocodile images based on different angles, lighting and backgrounds. So, we also tried to normalize and augment the data to improve model generalization.

⇒ In our next plan, we will apply different identification features for finding unique dorsal scales arrangement, facial scale patterns and also we will use the annotation tools like LabelImg, and VGG image annotator to mark different features in the gathered dataset. Also, we have preprocessed the dataset images. In those, we have standardized and resize the images for consistent input for modeling of deep learning and also scaling of pixel values. Also, we augmented the data for flipping and adjustment of brightness and improving robustness.

⇒ In the next week, we are planning to prepare a dataset. So, we will convert the dataset into the Pascal VOC or COCO format. Also, we will use the tensorflow object detection API. For the model training, we will use pre-trained faster RCNN (As ResNet50) for the learning transfer. Also, we are planning to use mAP and IoU high precision performance evaluation in detecting keys in biometric regions.

⇒ For CNN based identification model, we will do the feature extraction and classification model for the identification.

⇒ For the feature extraction, we will crop out detected biometric regions from the RCNN output and use CNN for the extraction. For the classification, we will train the model on cropped

features with labels for mugger crocodiles. For that, we have planned to use softmax classification for multi class identification.
At the end, we are watching the identification pipeline, (Input image → cropped regions → nearest matching identification → identification of mugger crocodiles with confidence score).