Classification of animals with attributes using image processing and machine learning algorithms

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Abstract: Technology has been taken part a significant role to play in wildlife and ecosystem conservation. It reduces the human workload and time for circumstances which require immediate results. In computer vision related problems, image processing and machine learning algorithms show better performance with higher accuracy rate. Animal detection and classification is important in ecological studies and machine learning techniques can be used to support it. A related challenge is to identify more than one animal in a single frame. There is a need to enhance the existing system to recognize an animal from multiple animals in a single frame with effective and accurate identification. The work started by collecting the images from Google for the dataset and convert those images to an XML file using *LabelImg*. Then train the system with images and XML for classification. For the input of a testing image, the system detects the object in the image using the *detecto* package. After detecting the object, the features of the object are collected. The system compares those features with the already trained features. If the system identifies any animal in the frame, it displays the name of the animal with its attributes. If it is not the case, a message for nonidentification will be notified. The developed system gives an accuracy of more than 92%. The system uses image processing and machine learning algorithms to classify animals with an increase of accuracy by 10%. The work presents an enhanced system to provide the most accurate identification of wild animals with attributes.

Keywords: Animal identification, Classification of animals, *detecto* classification