

Digital Analysis and Image Processing of Wildlife Species Using TENSORFLOW

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Abstract: In early days, the digital image processing commonly known as image processing was adopted for general aspects such as standard conversion, photograph enhancement, medical imaging, character recognition within the domain of satellite imagery and medical science. The proposed academic project includes the digital image processing using digital computer and various algorithms through dedicated and general use software's. The project considers the utilization of digital image processing techniques for wildlife province. The intent of selecting the wildlife domain is to account the effectiveness of digital technologies such as image processing to improve the recognition and identification matrix of wildlife species. The project further involves the finding the gaps or lacunas in current identification procedures through various surveys and investigation on social level. The important objective of the project is to remove the major gaps or lacunas/hurdles in identification of wildlife species characters through digital image processing with making the system digital, faster, safe, accurate and cheaper. The core project part considers the collection of images from different sources and processing it through digital image processing for general and common uses of quality enhancement and data extraction. The project also includes the data/character extraction through software namely TENSORFLOW and associated algorithms.

Index Terms: Image, Wildlife, Matrix, TENSORFLOW, Digital.

I. INTRODUCTION

The project considers the utilization of digital image processing techniques for wildlife province. The intent of selecting the wildlife domain is to account the effectiveness of digital technologies such as image processing to improve the recognition and identification matrix of wildlife species characters. The project further involves the finding the gaps or lacunas in current identification procedures through various surveys and investigation on social level. The important objective of the project is to remove the major gaps or lacunas/hurdles in identification of wildlife species characters through digital image processing with making the system digital, faster, safe, accurate and cheaper. The core project part considers the collection of images from different sources and processing it through digital image processing for general and common uses of quality enhancement and data extraction. The project also includes the data/character extraction through software namely TENSORFLOW and associated algorithms.

II. AIM

The aim of the project is to formulate the compendium to recognize and categorize the wildlife species using digital image processing.

III. OBJECTIVES

- A) Finding the lacunas in current identification process of wildlife through various surveys on social level.
- B) Development of systematic methodology to identify and classify the wildlife species on the basis of new day technologies such as TENSORFLOW through image processing.
- C) Data extraction through software namely TENSORFLOW and other supportive algorithms.
- D) Iterations to make the mechanism digital, safe, faster, accurate and cheaper as compared to traditional aspects.

IV. LITERATURE REVIEW

An application of image processing for conservation of natural life: Published by Ismail Saritas, Ilker Ali ozkan. In this study, a station has been set up containing three cameras, a wifi antenna, a solar power panel and a wind tribune in the wild sheep natural preservation area. To store and process the data collected by the system a unit consisting of a wifi receiver and computer are established in Technology Faculty of Sulcus University. The study is performed on the transferred images in the central unit by using image processing techniques of MATLAB software. The conservation of crop field has been a main content and a complex issue. The animals mainly elephants from the protected area [PAs] are continuously attacking the crop field over the years and the protection of this crop field has become a main concern. Wildlife intrusion in areas with high human mobility is proved to be lethal for both human beings and animals. The surveillance and tracking of the wild elephants are difficult due to their size and nature of movement. Further, identifying the species captured from camera is a critical challenge. Thus, our proposed system seeks to identify wild elephants that disturb the human life and the agricultural fields with the aid of an intelligent image processing algorithm in Raspberry pi. In our methodology, the process followed is the detection of motion in the video frame and identification of the objects in the area descriptor as the local features which describes the unique features of animal. So it detects the elephants accurately and creates the different sound via speaker like honey bees sound which mainly irritates the wild elephants and also focusing the bright focus lights

on the elephants so it cannot see properly and has a more chance to stop and get back into the forest. The system also simultaneously alerts the authorized person if the elephant is detected by sending a message through IoT (Internet of Things). In this study, image enhancement process is performed, and the best images focused on Anatolian wild sheep are acquired. Improved static images are used for the determination of where the Anatolian wild sheep on the picture, area occupied by the sheep in pixels and number of the sheep by using the techniques of picture partitions.

Limitations of existing system

- Existing system does not include the use of computer program towards categorization of wildlife species based on image processing.
- The prevailing system does not account for difficulties of manual classification system which is safety concern.

V. PROPOSED SOLUTION

The intent of selecting the wildlife domain is to account the effectiveness of digital technologies such as image processing to improve the recognition and identification matrix of wildlife species characters. The important objective of the project is to remove the major gaps or lacunas/hurdles in identification of wildlife species characters through digital image processing with making the system digital, faster, safe, accurate and cheaper. The core project part considers the collection of images from different sources and processing it through digital image processing for general and common uses of quality enhancement and data extraction. The project also includes the data/character extraction through software namely TENSORFLOW and other algorithms.

TENSORFLOW is a programming and numeric computing platform used by engineers and scientists to analyze data, develop algorithms, and create models. TENSORFLOW provides the tool which is helpful to transform the ideas into algorithm including mathematical, engineering, and scientific functions. It enables application specific algorithm in domain such as signal and image processing, control design, computational biology etc.

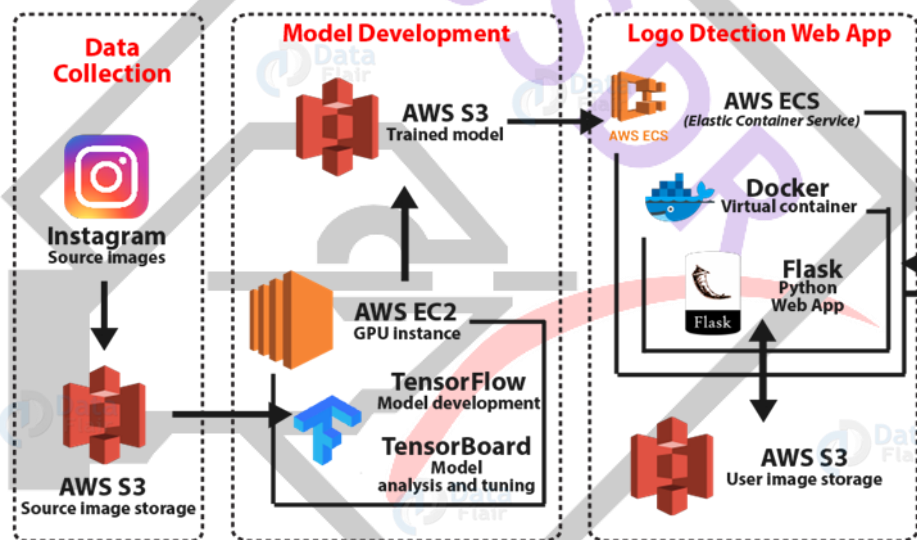


Image 1- TENSORFLOW ARCHITECTURE

The approximate deliverables expected from the project include the compendium explaining the current lacunas in wildlife species characters' identification which is proposed to resolve using digital image processing. It will deliver the comprehensive methodology adopted to create the algorithm for better identification and data extraction from the selected images.

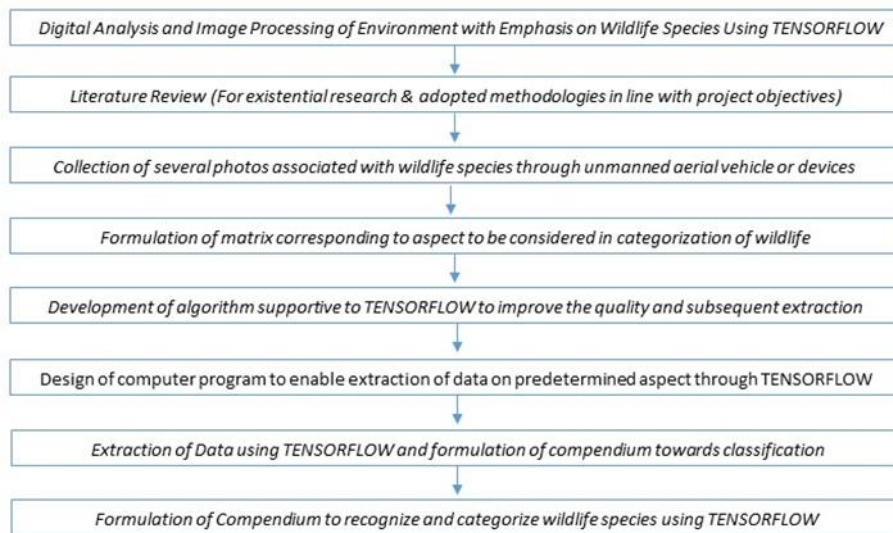


Image 2 – Flow Chart [Proposed Methodology]

VI. CONCLCUSION

Above proposed methodologies will be adopted through TENSORFLOW architecture to identify and classify the wildlife species through digital analysis and image processing. The identified and classified output will be represented in subsequent phase of the project.

REFERENCES

- [1] Ilkar Ali and Tahir Sag, “An Application of Image Processing for Conservation of Natural Life,” Ismail SARITAS* 1, ISSN:2147-8228
- [2] Shailesh K, Harsh Vardhan, Sivakumar T, Vijaya Poojitha, Detection of Wild Elephants Using Image processing on raspberry, ISSN:2320-088X.
- [3] Shahrin Teheril, Onsen Taygarl, “Animal Classification Using Facial Images with Score-Level Fusion, ISSN1751-9632