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CONTROLLING OF ILLEGAL SAND MINING USING MACHINE LEARNING AND OCR

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Abstract: In this project, we have proposed a camera footage-based sand theft detection along with thieves tracking based on object identification. For this purpose, we use image processing to detect theft occurrence and track thieves via gps location shared. we have developed a proposed design using Deep learning. Here, we have used image processing to detect sand theft. This system focuses on detecting objects. Here we process the entire video but we work on initial video frame in which the moving objects are segmented from the background.we applied image preprocessing steps in order to remove undesirable noise and we have used some image processing methodology to fill gaps in the detected objects. The system presented in the project uses OpenCV to detect a vehicle. the vehicle images are sent to the SMS notifications or remote alerting systems.

INTRODUCTION

Sand burglary or unapproved or illicit sand mining prompts a broadly obscure worldwide case of regular and non-inexhaustible asset consumption issue practically identical in degree to worldwide water shortage. For a huge number of years, sand and rock have been utilized as a part of the development of streets and structures. Today, interest for sand and rock keeps on expanding. Mining administrators, in conjunction with conscious asset organizations, must work to guarantee that sand mining is led in acapable way. Exorbitant in stream sand-and-rock mining causes the debasement of streams. In stream mining brings down the stream base, which may prompt bank disintegration. Exhaustion of sand in the streambed and long beach front zones causes the extending of waterways and estuaries, and the expansion of stream mouths and waterfront bays. It might likewise prompt saline water interruption from the close-by ocean. The impact of mining is intensified by the impact of ocean level ascent. Any volume of sand traded from streambeds and beach front regions is a misfortune to the framework. Unnecessary in stream sand mining is a risk to spans, waterway banks and adjacent structures. Sand mining likewise influences the abutting groundwater framework and the utilizations that neighborhood individuals make of the stream. In stream sand mining brings about the pulverization of oceanic and riparian living space through expansive changes in the channel morphology. Effects incorporate bed corruption, bed coarsening, brought down water tables close to the streambed, and channel insecurity. These physical effects cause corruption of waterways and oceanic territories and may prompt the undermining of extensions and different structures. Preceded with extraction may likewise make the whole streambed debase to theprofundity of uncovering. Sand mining creates additional vehicle movement, which contrarily debilitates nature.

RELATED WORKS

Most existing methods for automatic license plate recognition (ALPR) focus on a specific license plate (LP) type, but little work focuses on multiple or mixed LPs.This article proposes a single neural network called ALPRNet for detection and recognition of mixed style LPs. In ALPRNet, two fully convolutional one-stage object detectors are used to detect and classify LPs and characters simultaneously, which are followed by an assembly module to output the LP strings. ALPRNet treats LP and character equally, object detectors directly output bounding boxes of LPs and characters with corresponding labels, so they avoid the recurrent neural network (RNN)branches of optical character recognition (OCR) of the existing recognition approaches. We evaluate ALPRNet on a mixed LP style dataset and two datasetswith single LP style, the experimental results show that the proposed network achieves state-of-the- art results with a simple one-stage network.

PROPOSED SYSTEM

The proposed system of multi class classification will detect sand theft or not. Training data and Test data present in the proposed data model. With the help of training data, we just going to explain the system to identify the accurate results. In the proposedtraining process, the dataset is feed to the data preprocessing model. The data preprocessing model helps to eliminate the unwanted images and then given to that neural network layers (Conv2D,Maxpool,dense and flatten layers)

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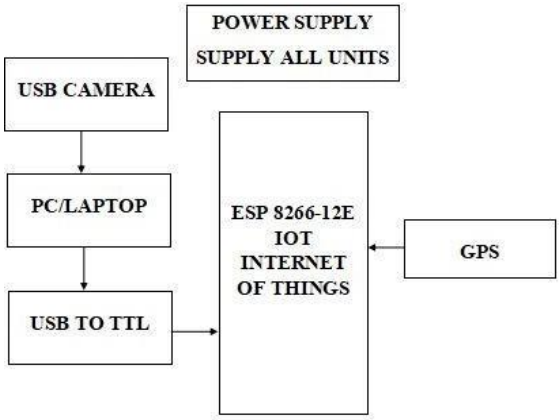
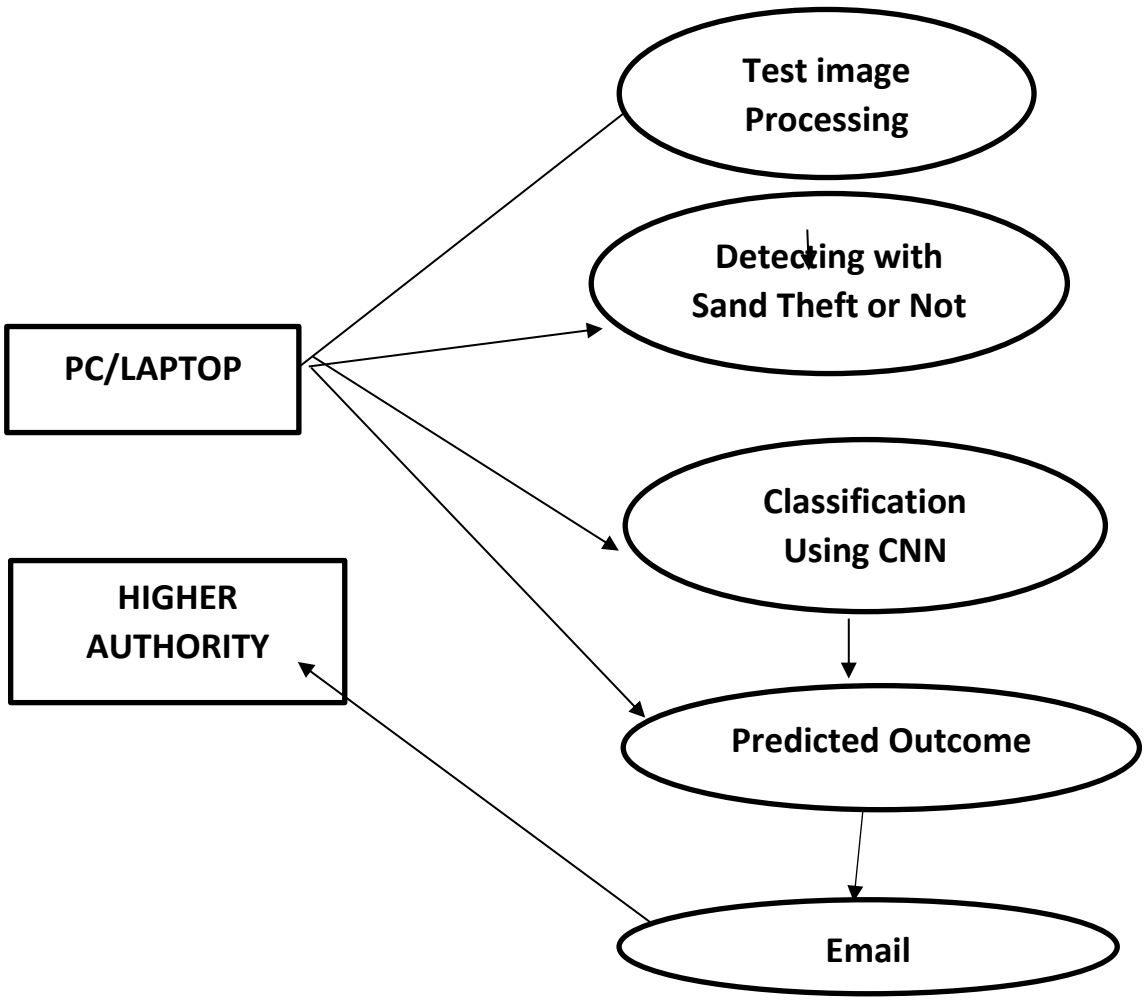
used to enhance thepixel quality by convolve 2 dimensional array and max pooling operation is performedon the received input which is identification of highest value in each patch of feature map, dense layer is used to classify image based on output from convolutional layers and finally flatten layer is used to make the multidimensional input into one dimensional flatten layer or fully connected layer. On successful completion of neural network layerprocess, automatically model.ckpt file will be generated. The CNN model will analyzethe image given input image and predict the correct result using the data pre-trained. Thus the correct desired output is got from faster R-CNN model. The Artificial Intelligence once predicted sand theft vehicle send to the data through USB to TTL, The micro controller receive serial data and the gps value automatically updated to the cayenne web page.



BLOCK DIAGRAM HARDWARE



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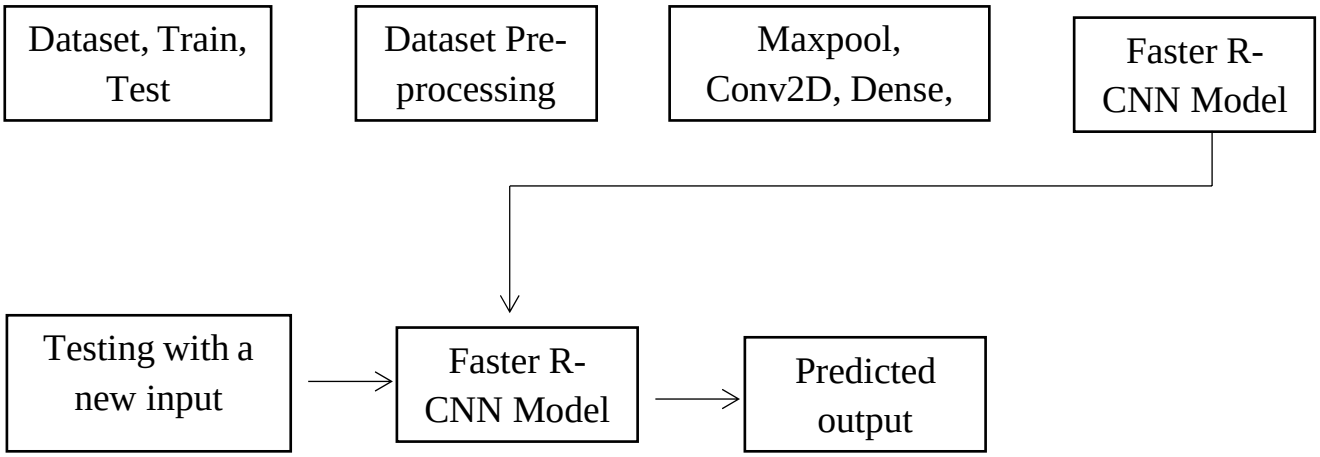
USECASE DIAGRAM



BLOCK DIAGRAM SOFTWARE

RESULT AND DISCUSSION

Convolutional Neural networks are designed to process data through multiple layers of arrays. This type of neural networks is used in applications like image recognition or face recognition. The primary difference between CNN and any other ordinary neural network is that CNN takes input as a two-dimensional array and operates directly on the images rather than focusing on feature extraction which other neural networks focus on. The dominant approach of CNN includes solutions for problems of recognition.

CNN utilizes spatial correlations that exist within the input data. Each concurrent layerof a neural network connects some input neurons. This specific region is called local receptive field. Local receptive field focusses on the hidden neurons. The hidden neurons process the input data inside the mentioned field not realizing the changes outside the specific boundary.

For the creation of our proposed model, we have used the TensorFlow deep learning. The framework provides for the creation of deep networks by choosing appropriate layers and specifying the preceding and succeeding layers in the design. The inputs to the framework can be in the model.ckpt format, which is particularly suitablefor the representation of 2D data, such as a Kaggle dataset. The steps in preparing the data are explained in the previous section, and are the same for each Kaggle dataset images. Hence, we have one model.ckpt model representing all the humans, and each train.csv and test.csv file has the data along with the label. This label is used in both the training and testing phase.

Batch sizes are also variable, and can be set by the user. For large batch sizes, the learning process is significantly slow (requires a few days) and often terminates dueto insufficient memory availability. We have used a batch size of 20 for most experiments. The training of the network is run for 120 iterations. After every 100 iterations the network is tested for accuracy. Initial learning rate is set to 0.001 and for every 100 iteration the learning rate drops by a factor gamma=0.1.

CONCLUSION

The project sand theft detection includes different problems that are the sand theftdetection from surveillance videos is not only a challenging problem of human detection and human activity recognition in the field of computer vision, but also an urgent needfor preventing theft crimes in real life. So to resolve the problem of sand theft we haveto study the different techniques. The image processing techniques are implemented inthe research work and get the better results of sand theft detection. There are several ways in which the method proposed can be improvised at a greater length by using the modern security methods. For instance a high resolution camera can be used to take pictures of the person who has attempted a theft. Also data communications and networking is an upcoming field that can be exploited to achieve better performance inthis area.

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REFERENCE

[1] M. M. Rashid, M. A. Rahman, N. Farahana, and A. Farhana (2012), "Automatic Parking Management System and Parking Fee Collection Based on Number Plate Recognition," International Journal of Machine Learning and Computing, vol. 2, No. 2,pp. 94.

[2] C. Patel, D. Shah, and A. Patel (2013), "Automatic Number Plate Recognition System (ANPR): A Survey," International Journal of Machine Learning and Computing, vol. 69, No. 9.

[3] S. H. Bailmare and A. B. Gadicha (2013), "A Review paper on Vehicle Number Plate Recognition (VNPR) Using Improved Character Segmentation method," International Journal of Scientific and Research Publications, vol. 3, no. 12, pp. 1-3,.

[4] A. Kumar and S. Godara (2015), "A Review: On Number Plate Recognition" InternationalJournal of Science and Research (IJSR), vol. 4, no. 5.

[5] K., Sonavane, B. Soni, and U. Majhi (2015), "Survey on Automatic Number Plate Recognition (ANR)," International Journal of Computer Applications (0975 – 8887), vol. 125, no. 6.