NUMBER PLATE DETECTION SYSTEM

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ABSTRACT

Road accident is most unwanted thing to happen to a road user, though they happen quite often. One of the major causes for the accidents is wrong-way driving. Drivers who make wrong-way entries onto freeways or other restricted roadways pose a serious risk to the safety of other motorists and themselves. Wrong-way driving often leads to the most feared of traffic crashes, the head-on collision. Wrong-way crashes are relatively infrequent but they are more likely to produce serious injuries and fatalities compared to other types of freeway crashes. The main objective of this project is to identify the vehicles which are moving in the wrong direction and capture the registration id of the vehicle to generate penalty for the respective registration id. We use camera which captures the video and video will be divided into frames to identify the vehicles moving in opposite direction. With the help of this project we can reduce the burden of traffic police by identifying the registration number of the vehicle and generating penalty for the respective vehicle which are moving in the opposite direction. Based on the penalty generated, this information would be forwarded to the individual owning the vehicle via message. Using this work of the middle organization like meeSeva would be reduced.

Introduction

Road accident is most unwanted thing to happen to a road user, though they happen quite often. One of the major causes for the accidents is wrong-way driving. Drivers who make wrong-way entries onto freeways or other restricted roadways pose a serious risk to the safety of other motorists and themselves.

Wrong-way driving often leads to the most feared of traffic crashes, the head-on collision. Wrong-way crashes are relatively infrequent but they are more likely to produce serious injuries and fatalities compared to other types of freeway crashes.

Driving the wrong way on freeways has been a nagging traffic safety problem since the interstate highway system was started. Despite over forty years of highway design, marking, and signing improvements at freeway interchanges, the problem of wrong- way driving persists. Several crashes in India have brought attention to the severity and hazard of wrong- way drivers. Therefore, to overcome this problem, we made a wrong-way detector.

In this project, we will identify the vehicles by capturing the registration number of the vehicles which are moving in wrong direction. Most of cities and small regions the traffic Chillan generation system for wrong-way driving is manual process. Sometime it turns into corruption because of traffic police writes something else on challan paper or it generate fake challan book and pay to government something else. Our application scans the registration number of the vehicle which is moving in wrong direction and charges penalty to the vehicles going the wrong direction.

Problem Statement

Now-a-day accidents can occur on either one- or two-way roads, as well as in parking lots and parking garages, and may be due to driver inattention or impairment, Many of the wrong way have Little or no data exists on exact entry points, because the initial entry usually has no

witnesses since the majority of wrong-way driving incidents occur in the early morning hours. Additionally, it is difficult to locate and track wrong- way drivers once they are on the highway.

In this project, we will identify the vehicles which are moving in the wrong direction. We will capture the registration number of the vehicle and generate the penalty for the respective vehicle.

At present now a days, traffic police will observe and notice the vehicles which are moving in wrong direction. Traffic police may not observe all the vehicles, with our project we can identify the vehicles which are not following the rule of wrong-way. Disadvantages Of Existing System are:

- Helps the traffic organization to reduce the man power.
- Traffic police may not observe all the vehicles.

Proposed System

In the Proposed System the camera will capture the video which is again divided into frames. Using these images, we can capture the vehicles which are moving in opposite direction and generate penalty for the respective captured vehicles.

Design is concerned with identifying software components, specifying relationships among components, maintaining a record of design decisions. Design consists of architectural design and detailed design.

- Architectural Design involves identifying the software components, decoupling and decomposing them in to processing modules and conceptual data structures and specifying the interconnection between the components.
- Detailed Design is concerned with the details of how to package the processing modules and how to implement the processing algorithms, data structures and interconnection between them.

Pixels are generally arranged in a 2D grid, and are represented by using dots or squares. Every pixel is sample of the original image; a greater number of samples typically provide more accurate representation of original image. In case of color image systems, color is typically represented by three or four component intensities such as red, green, and blue, or cyan, magenta, yellow, and black.

Pixels are monochromatic in nature. Every pixel is blended from some combination of three primary colors which are Red, Green, and Blue and is a single solid colour. Thereby, each pixel will have a Red, GREEN and BLUE components in it. Physical dimensions of any digital image are always measured in pixels and are called as pixel or an image resolution. Pixels are commonly scalable to different physical sizes on your monitor or on any photo print.

Fig.: Pixel representation of image

Pixel values:
As shown in this bimodal image, every single pixel is assigned a total value, in this example 0
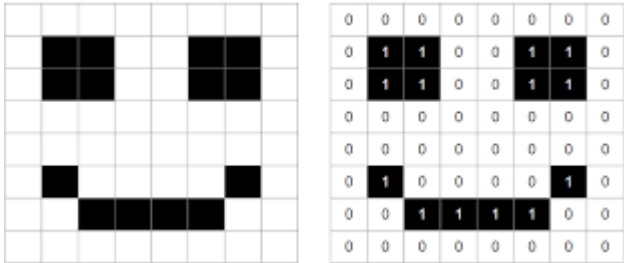
for black and 1 for white. Pixel dimensions:
Horizontal and vertical measurements of an image which are expressed in pixels are pixel dimensions. Pixel dimensions can be determined by multiplying width and height by the dpi. There are pixel dimensions for a digital camera also, which are expressed as the number of pixels horizontally and vertically that define its resolution (e.g., 2,048 * 3,072).

Python is an interpreted, high-level, general-purpose programming language. Created by Guido van Rossum and first released in 1991, Python's design philosophy emphasizes code readability with its notable use of significant whitespace. Its language constructs and object-oriented approach aim to help programmers write clear, logical code for all kinds of projects.

Compared to other languages like C/C++, Python is slower. But another important feature of Python is that it can be easily extended with C/C++. This feature helps us to write computationally intensive codes in C/C++ and create a Python wrapper for it so that we can use these wrappers as Python modules. This gives us two advantages: first, our code is as fast as original C/C++ code (since it is the actual C++ code working in background) and second, it is very easy to code in Python. This is how OpenCV- Python works, it is a Python wrapper around original C++ implementation and the support of Numpy makes the task easier. Numpy is a highly optimized library for numerical operations. It gives a MATLAB-style syntax. All the OpenCV array structures are converted to-and-from Numpy arrays. So whatever operations you can do in Numpy, you can combine it with OpenCV, which increases number of weapons in your arsenal. Besides that, several other libraries like SciPy, Matplotlib which supports Numpy can be used with this.

So OpenCV-Python is an appropriate tool for fast prototyping of computer vision problems.

Method of Implementation

STEP 1: Extract frames from given video of a road.

STEP 2(a): Choosing 2 frames for analysis from all the extracted frames.

STEP 2(c): Preparing the image for the Hough Transform.

STEP 2(d): Performing Hough Transform on the edge detected image.

STEP 2(e): Detection of the divider line from the accumulator produced by Hough transform.

STEP 3(a): Determine the masks of left and right sides of the road using the traffic divider line.

STEP 3(b): Applying Masks to both the frames.

We can obtain the resulting 4 images by multiplying left and right masks to each of the frames.
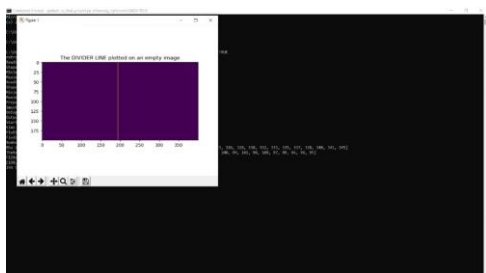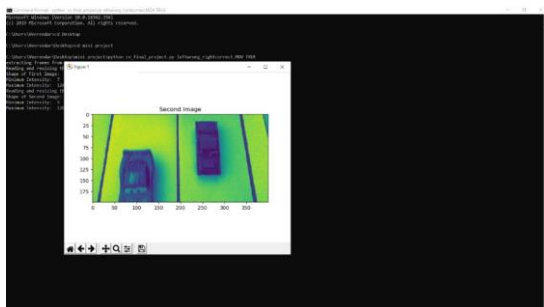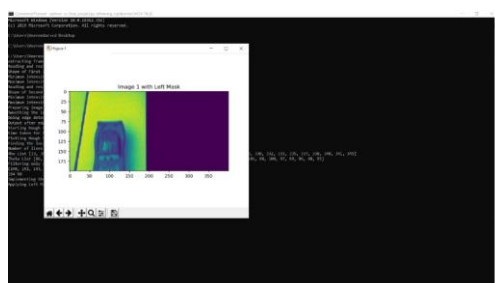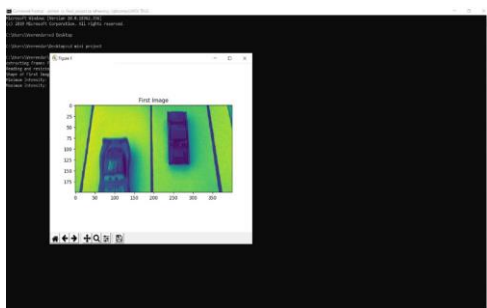
STEP 4: Optical Flow on Right and Left sides of the road.

STEP 4(a): Gaussian Smoothing on the images before applying optical flow method. STEP 4(b): Applying Lucas Kanade Method (Least Squares).

STEP 5: Determine whether the direction of the vehicle is correct or not.
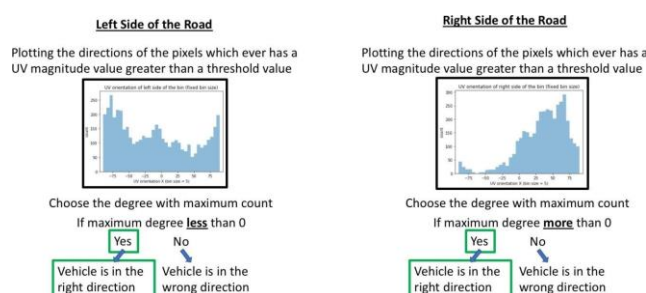
OUTPUT SCREENS

CONCLUSION

This undertaking presents a straightforward and powerful technique for upgrading corrupted archive pictures. The strategy utilized in this undertaking comprises binarization that is tolerant to various kinds of archive debasement, for example, non- uniform brightening, ink seeping through and report smear. This picture binarization depends on nearby thresholding alongside versatile differentiation mapping. This binarization calculation has been tried over different commotion influenced record pictures and is binarized usefully.

Future Enhancement

While utilizing post handling calculation for disengaged pixel evacuation in this undertaking, in some cases dabs and letters in order related substance may be expelled. After evaluating several techniques, we have come to know that, in the future, the image binarization can be enhanced and developed by taking hybrid techniques which will apply different methods for the improved outcomes. Besides this, we can focus on the pre-processing and post. Historical documents hold important information of ancient times.

References

1. Stathis, P., Kavallieratou, E. and Papamarkos, N. (2008) An Evaluation Technique for Binarization Algorithms. Journal of Universal Computer Science, 14, 3011-3030. https://doi.org/10.1109/ICPR.2008.4761546.

2. Mehmet, S. and Sankur, B. (2004) Survey over Image Thresholding Techniques and quantitativePerformance Evaluation. Journal of Electronic Imaging, 13, 146-165. https://doi.org/10.1117/1.1631315

3. Gaceb, D., Lebourgeois, F. and Duong, J. (2013) Adaptative Smart-Binarization Method: ForImages of Business Documents. 2013 12th International Conference on Document Analysis andRecognition, Washington DC, 25-28 August 2013. https://doi.org/ 10.1109/ICDAR.2013.31

4. Kamakshaiah Kolli, B. Neeraja, V. Shiva Narayana Reddy, A Data Mining Approach to Crop Yield Prediction Using Machine Learning, Palarch's Journal Of Archaeology of Egypt/Egyptology, Volume 18, Issue 04(2021), pp.1608-1626, ISSN 1567-214x

5. Mollah, A.F., Basu, S., Das, N. and Sarkar, R. (2009) Binarizing Business Card Images for Mobile Devices. International Conference on Advances in Computer Vision and IT, Aurangabad,16-19 December 2009, 968-975.

6. Bradley, D. and Roth, G. (2011) Adaptive Thresholding Using Integral Image. Journal of Graphics Tools, 12, 13-21. https://doi.org/10.1080/2151237X.2007.101292 36.

7. V Shiva Narayana Reddy , Dr Divya Midhunachakkaravarthy,   A Multi-Level Gene-Disease Based Feature Extraction And Classification Framework For Large Biomedical Document Sets, JOURNAL OF OPTOELECTRONICS LASER ISSN:1005-0086 Volume 41 Issue 2, 2022