A SURVEILLANCE SYSTEM TO DETECT BIKES WITHOUT HELMET AND TRIPLE RIDERS

[1]**MR.D. ARUN KUMAR,** MTech, Department of EEE, Assistant professor, DVR &Dr.HS MIC College of Technology, Kanchikacherla
[2]**K.Uday Kiran,** [3]**U.Vennela,** [4]**V.Koteswara Rao,** [5]**B.Srinivas Naik,** [6]**T.Satya Vara Prasad,** Department of EEE, UG Students, DVR &Dr.HS MIC College of Technology, Kanchikacherla.

ABSTRACT:
This paper presents a surveillance system to detect bikes without helmet and triple riders, Motorcycle accidents have been rapidly growing through the years in many countries. In India more than 37 million people use two wheelers. Therefore, it is necessary to develop a system for automatic detection of helmet wearing and triple rides for road safety. In order to maintain the road safety the government implemented the challan system, here we are introducing this system to get more accuracy. Therefore, a custom object detection model is created using a object detection and image processing techniques which can detect Motorcycle riders. On the detection of a Helmetless rider and triple rides, if the bike riders didn't wear helmets and if they are going with triple rides then at that time the whole image is captured by raspberry pi using web cam and that photo is send to the particular organization who are handling this process. This Application can be implemented in real-time using a Webcam.

Keywords: Raspberry pi, python, telegram bot.

INTRODUCTION:

In virtually each country, the two-wheeler is a frequent skill of transportation. However, due to the fact of the lack of protection, there is a large risk. It is quite encouraged that bike rid-ers use helmets to reduce the threat associated.

Two-wheelers are the most frequent motive of site visitors accidents. Though reckless and rash driv-ing is the major reason of these incidents, head accidents are the main motive of fatalities. According to research, extra than one-third of those killed in vehicle accidents should have lived if they had worn a helmet. Helmet use can limit accident deaths through 30 to 40%.

The variety of bike accidents precipitated by using riders who do no longer put on helmets has been frightening. According to a Delhi Police annual document (published in 2017), 35-40% of deadly accidents in the town in 2016 had been precipitated by means of riders "not carrying helmets" or "using helmets of insufficient quali-ty. According to the Section of the 129 Motor Vehicles Act of 1988 makes that it obligatory for two-wheeler riders to put on protection helmets. A helmet must additionally have a thickness of 20-25 mm and extraordinary foam, in accordance to the guideline. It additionally ought to be ISI-certified and adhere to Bureau of Indian Standards.

With the speedy pace of lifestyles and work, human beings have begun to compromise on the most necessary object they require to feature efficiently in a given scenario, namely, fantastic relaxation and sleep to remain ac-tive whilst performing a task. Drowsy riding is a incredibly unsafe phenomenon that has before resulted in severa accidents. According to sure studies, about 1200 human beings died and 76000 human beings had been severely injured as a end result of a fatigued driver who precipitated a crash. We can preclude huge site visitors accidents with the aid of the use of modern-day technological know-how and real-time scanning structures with cameras to inform vehicle drivers who are feeling drowsy thru a drowsiness detection system. The purpose of this assignment is to create a working prototype of a sleepiness detecting system. The center of attention will be on a framework that can consistently realize whether or not the driver's eyes are open or closed. It has been dis-covered that through focusing on the eyes, the onset of driver weariness can be detected in order to keep away from an vehicle accident. Drowsiness is detected the use of eye moves and the time between blinks to provide a rating that determines whether or not or now not a motorist is drowsy.

EQUIPMENTS:
HARD WARE:
RASPBERRY PI:
The Raspberry Pi is a collection of small single-board computer systems developed in the United Kingdom with the aid of the Raspberry Pi Foundation to promote the instructing of simple laptop science in colleges and in growing countries. The unique mannequin became a ways greater famous than anticipated, promoting backyard its target market for makes use of such as robotics. It does now not encompass peripherals (such as keyboards, mice and cases). However, some add-ons have been covered in quite a few legitimate and unofficial bundles. The Raspberry Pi hardware has developed through a number of variations that function editions in reminiscence capacity and peripheral-device support.

This block graph depicts Models A, B, A+, and B+. Model A, A+, and the Pi Zero lack the Ethernet and USB hub components. The Ethernet adapter is internally linked to an extra USB port. In Model A, A+, and the Pi Zero, the USB port is linked directly to the SoC. On the Pi 1 Model B+ and later models the USB/Ethernet chip incorporates a five-point USB hub, of which four ports are available, whilst the Pi 1 Model B solely presents two. On the Pi Zero, the USB port is additionally related at once to the SoC, however it makes use of a micro USB (OTG) port. Processor, RAM, Networking, Peripherals, Video, Real Time Clock.

WEB CAMERA:
A webcam is an enter machine that captures digital images. These are transferred to the computer, which strikes them to a server. From there, they can be transmitted to the internet hosting page. Laptops and pcs are frequently outfitted with a webcam.

Webcam traits include:
Compared to different fashions of camera, webcams are appreciably decrease in cost, specially from a video telephony perspective.

Compared to most handheld cameras, the most decision of a webcam is low.

The facets of a webcam are generally established on the software program running device of the laptop as properly as the laptop processor being used. Webcams can have extra points such as action sensing, photograph archiving, automation or even customized coding.

Webcams are broadly speaking used in videoconferencing and for safety surveillance. Other

makes use of encompass video broadcasting, social video recording and pc vision.

A. SOFTWARE:

a) Raspbian OS:

Raspbian is a Debian-based pc working gadget for Raspberry Pi. There are quite a few variations of Raspbian which includes Raspbian Stretch and Raspbian Jessie. It has been formally provided by way of the Raspberry Pi Foundation as the foremost operating machine for the family of Raspberry Pi single-board computers. Raspbian was once created by using Mike Thompson and Peter Green as an impartial project. Raspbian is exceedingly optimized for the Raspberry Pi line's low-performance ARM CPUs. Raspbian makes use of PIXEL, Pi Improved X home windows Environment, Lightweight as its essential computing device surroundings as of the state-of-the-art update. The scripts and documents created are run on the Raspbian OS.

b) PYTHON OS:

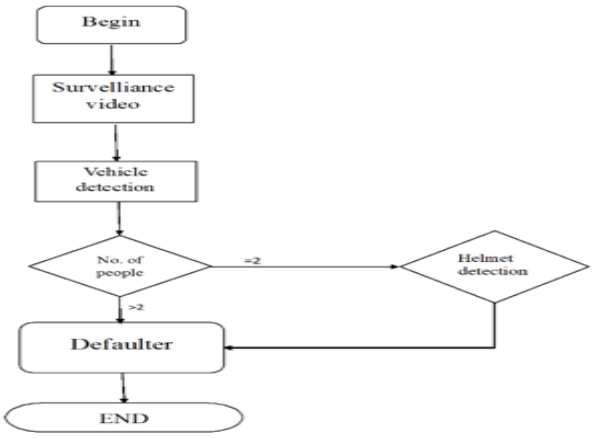
Python is a exceptional and effective programming language that's convenient to use (easy to examine and write) and with Raspberry Pi lets you join your challenge to the actual world. Python syntax is very clean, with an emphasis on readability and makes use of Standard English keywords. The best introduction to Python is thru IDLE, a Python improvement environment. Open IDLE from the Desktop or purposes menu. IDLE offers you a REPL (Read-Evaluate-Print-Loop) which is a instant you can enter Python instructions in to. As it is a REPL you even get the output of instructions printed to the display screen besides the usage of “print”. Two variations of Python are available: Python two and Python three Python three is the latest model and is recommended, however Python two is on hand for legacy functions which do not help Python 3 yet. IDLE additionally has syntax highlighting built in and some aid for auto completion.

c) TELEGRAM BOT:

The telegram bot, performs the various tasks like converting files, checking emails and even letting users play games with others. Every bot has a unique handle, similar to Telegram user names. To add a bot, simply search for it, click on the bot handle and you will be able to interact with it in the chat window.

WORKING:

As per the block diagram the web cam starts the recording the traffic footage and that cam detects the vehicle and it checks weather the bikers is riding without helmet or with helmet. After that it checks the triple riding. If the person is riding without helmet or triple riding then the web camera captures the images. Those images will be received through the telegram bot.



CONCLUSION

In this paper, the proposed framework for automated detection of motorcyclists using except helmets makes use of adaptive history subtraction which is invariant to more than a few challenges such as

illumination, terrible high-quality of video, etc. The use of the deep gaining knowledge of for computerized getting to know of discriminative representations for classification duties improves the

detection price and reduces the false alarms ensuing into extra dependable system. The experiments on actual movies correctly observe ≈ 92.87% violators with a low false alarm fee of ≈ 0.50% on two actual video datasets and for this reason exhibit the effectivity of the proposed approach.

REFRENCES:

[1] K. Dahiya, D. Singh, and C. K. Mohan, "Automatic detection of bikeriders without helmet using surveillance videos in real-time," in Proc. Int. Joint Conf. Neural Networks (IJCNN), Vancouver, Canada, 24–29 July 2016, pp. 3046– 3051.

[2] D. Singh, C. Vishnu, and C. K. Mohan, "Visual big data analytics for traffic monitoring in smart city," in Proc. IEEE Conf. Machine Learning and Application (ICMLA), Anaheim, California, 18–20 December 2016.

[3] C. Behera, R. Ravi, L. Sanjeev, and D. T, "A comprehensive study of motorcycle fatalities in south delhi," Journal of Indian Academy of Forensic Medicine, vol. 31, no. 1, pp. 6–10, 2009.

[4] W. Hu, T. Tan, L. Wang, and S. Maybank, "A survey on visual surveillance of object motion and behaviors," IEEE Trans. Systems, Man, and Cybernetics, Part C: Applications and Reviews, vol. 34, no. 3, pp. 334–352, 2004.

[5] M. Dasgupta, O. Bandyopadhyay and S. Chatterji, "Automated Helmet Detection for Multiple Motorcycle Riders using CNN," IEEE Conference on Information and Communication Technology, Allahabad, India, 2019, pp.1-4.

[6] J. Li et al., "Safety helmet wearing detection based on image processing and machine learning," 2017 Ninth International Conference on Advanced Computational Intelligence (ICACI), Doha, 2017, pp.201-205.

[7] N. BoonsiriSumpun, W. Puarungroj and P. WairocanaPhuttha, "Automatic Detector for Bikers with no Helmet using Deep Learning," 22nd International Computer Science and Engineering Conference (ICSEC), Chiang Mai, Thailand, 2018, pp.1-4.

[8] B. Yogameena, K. Menaka and S. Saravana Perumaal, "Deep learning-based helmet wear analysis of a motorcycle rider for intelligent surveillance system," in IET Intelligent Transport Systems, vol. 13, no. 7, 2019, pp.1190-1198.

[9] KavyashreeDevadiga, Yash Gujarathi, Pratik Khanapurkar, Shreya Joshi and Shubhankar Deshpande. "Real Time Automatic Helmet Detection of Bike Riders" International Journal for Innovative Research in Science & Technology Volume 4 Issue 11, 2018, pp.146- 148.

[10] R. V. Silva, T. Aires, and V. Rodrigo, " Helmet Detection on Motorcyclists using image descriptors and classifiers", in Proceeding of Graphics, Patterns and Images (SIBGRAPI) ,Rio de Janeiro ,Brazil , 27-30 August 2014, pp.141-148R.

[11] PattasuDoughmala, KatanyooKlubsuwan, "Half and Full Helmet Detection in Thailand using Haar Like Feature and Circle Hough Transform on Image Processing" in Proceeding of IEEE International Conference on Computer and Information Technology, Thailand, Bangkok, 2016, pp.611-614.

ISSN: 0972-2750
Vol-13 Issue-04 No.04: 2023

[12] Redmon J, Farhadi A. YOLOv3: An Incremental Improvement [C]//IEEE Conference on Computer Vision and Pattern Recognition, 2018.
[13] Redmon, Joseph, and Ali Farhadi. 'YOLO9000: better, faster, stronger.' IEEE conference on computer vision and pattern recognition, 2017, pp.7263- 7271.
[14] Redmon J, Divvala S, Girshick R, et al. You only look once: unified, real time object detection [C]// Computer Vision and Pattern Recognition, 2016, pp.779-786.
[15] J. Mistry, A. K. Mishra, M. Agarwal, A. Vyas, V. M. Chudasama and K. P. Upla, "An automatic detection of helmeted and non-helmeted motorcyclists with license plate extraction using convolutional neural network," 2017 Seventh International Conference on Image Processing Theory, Tools and Applications (IPTA), Montreal, QC, 2017, pp.1-6.
[16] Manoharan, S. (2019),"An Improved Safety Algorithm For Artificial Intelligence Enabled Processors In Self Driving Cars",Journal of Artificial Intelligence, 1(02), 95-104.
[17] Jacob, I. J. (2019),"Capsule Network Based Biometric Recognition System",Journal of Artificial Intelligence, 1(02), 83-94.
[18] J. Chiverton, "Helmet presence classification with motorcycle detection and tracking," Intelligent Transport Systems (IET), vol. 6, no. 3, september 2012, pp.259–269.
[19] A. Adam, E. Rivlin, I. Shimshoni, and D. Reinitz, "Robust real-time unusual event detection using multiple fixed-location monitors," IEEE Transactions on Pattern Analysis and Machine Intelligence, vol. 30, no. 3, march 2008, pp.555–560.
[20] Duan, W. Liu, P. Fu, C. Yang, X. Wen, and H. Yuan, "Real-time on road vehicle and motorcycle detection using a single camera," Procs. of the IEEE Int. Conf. on Industrial Technology (ICIT), 10-13 Feb 2009, pp.1–6.