ABSTRACT

We propose a machine for Detection of People and Motorcyclist who are not wearing helmet. The developed application aims to help law enforcement by police, and eventually resulting in changing risk behaviours and consequently reducing the number of accidents and its severity. We present a framework for automatic detection of motorcyclists driving without helmets and people working in construction sites without helmet in surveillance videos and images. Video frames recorded by the CCTV camera and pictures taken at the scene are used to detect people who are not wearing helmet. If any person without helmet is found, then image will be capture or screen shoot will be taken and image will be stored in the database. The results show that the developed program is able to detect 81% of motorcyclists on various motorcycle types during daytime and night-time. The validation results reveal that the program achieves 74% accuracy in detecting the people without helmet the given stats are came up in the testing phase.

Proposed System

In the proposed system, first we apply adaptive background subtraction to detect the moving objects and stationary objects. These moving objects are then given to a Convolutional Neural Network (CNN) classifier as input which then classifies them into three classes namely, motorcyclists, people and non-motorcyclists. After this, objects other than motorcyclists and people are discarded and passed only objects predicted as motorcyclist and people for next step where we determine, weather the motorcyclist and people is wearing a helmet or not again using another CNN classifier. We assume that the head is located in the upper part of the incoming images and thus locate the head into top one fourth part of images. The located head of the motorcyclist and a person is then given as input to second CNN which is trained to classify with helmet vs. without-helmets.

System Architecture