**LITERATURE SURVEY**

# 1) Deep Neural Network for Human Face Recognition

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Face recognition (FR), the process of identifying people through facial images, has numerous practical applications in the area of biometrics, information security, access control, law enforcement, smart cards and surveillance system. Convolutional Neural Networks (CovNets), a type of deep networks has been proved to be successful for FR. For real-time systems, some preprocessing steps like sampling needs to be done before using to CovNets. But then also complete images (all the pixel values) are passed as input to CovNets and all the steps (feature selection, feature extraction, training) are performed by the network. This is the reason that implementing CovNets are sometimes complex and time consuming. CovNets are at the nascent stage and the accuracies obtained are very high, so they have a long way to go. The paper proposes a new way of using a deep neural network (another type of deep network) for face recognition. In this approach, instead of providing raw pixel values as input, only the extracted facial features are provided. This lowers the complexity of while providing the accuracy of 97.05% on Yale faces dataset.

# 2) Behaviour Based Data Dispatcher

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# Human life is a complex social structure. It is not possible for the humans to navigate without reading the other persons. They do it by identifying the faces. The state of response can be decided based on the mood of the opposite person. Whereas a person's mood can be figured out by observing his emotion (Facial Gesture). The aim of the project is to construct a "Facial emotion Recognition" model using DCNN (Deep convolutional neural network) in real time. The model is constructed using DCNN as it is proven that DCNN work with greater accuracy than CNN (convolutional neural network). The facial expression of humans is very dynamic in nature it changes in split seconds whether it may be Happy, Sad, Angry, Fear, Surprise, Disgust and Neutral etc. This project is to predict the emotion of the person in real time. Our brains have neural networks which are responsible for all kinds of thinking (decision making, understanding). This model tries to develop these decisions making and classification skills by training the machine. It can classify and predict the multiple faces and different emotions at the very same time. In order to obtain higher accuracy, we take the models which are trained over thousands of datasets.

# 3) Driver Fatigue Detection Based on Eye Tracking

**AUTHORS** **: Mandalapu Sarada Devi**

# The International statistics shows that a large number of road accidents are caused by driver fatigue. Therefore, a system that can detect oncoming driver fatigue and issue timely warning could help in preventing many accidents, and consequently save money and reduce personal suffering. The authors have made an attempt to design a system that uses video camera that points directly towards the driver’s face in order to detect fatigue. If the fatigue is detected a warning signal is issued to alert the driver. The authors have worked on the video files recorded by the camera. Video file is converted into frames. Once the eyes are located from each frame, by measuring the distances between the intensity changes in the eye area one can determine whether the eyes are open or closed. If the eyes are found closed for 5 consecutive frames, the system draws the conclusion that the driver is falling asleep and issues a warning signal. The algorithm is proposed, implemented, tested, and found working satisfactorily.

# 4) Driver Drowsiness Detection System Based on Feature Representation Learning Using Various Deep Networks

**AUTHORS :** **Sanghyuk Park, Fei Pan, Sunghun Kang, Chang D. Yoo**

# Statistics have shown that 20% of all road accidents are fatigue-related, and drowsy detection is a car safety algorithm that can alert a snoozing driver in hopes of preventing an accident. This paper proposes a deep architecture referred to as deep drowsiness detection (DDD) network for learning effective features and detecting drowsiness given a RGB input video of a driver. The DDD network consists of three deep networks for attaining global robustness to background and environmental variations and learning local facial movements and head gestures important for reliable detection. The outputs of the three networks are integrated and fed to a softmax classifier for drowsiness detection. Experimental results show that DDD achieves 73.06% detection accuracy on NTHU-drowsy driver detection benchmark dataset.