INTRODUCTION:

The current times when the whole world has shifted rapidly towards technology, eventually leading to a huge workforce of employees working on laptops or desktops. This has reduced the amount of physical work pressure but at the same time has also increased the strain on certain body parts like the spine and the eyes. This has led to various problems like slouching which can cause the spinal ligaments to stretch beyond their healthy limit, and poor posture can strain your spinal discs. This often results in increased strain of the outer annulus of the disc and also increase disc bulging and disc pressures. Computer Vision Syndrome, also referred to as Digital Eye Strain, describes a group of eye and vision-related problems that result from prolonged computer, tablet, e-reader and cell phone use. Many individuals experience eye discomfort and vision problems when viewing digital screens for extended periods. So, it is a major concern in the current scenario and here is the place where this project is helpful. Installing this in the CCTV or specially installed cameras can be used to monitor the physical posture of the employees on a regular basis. Monitoring their posture and notifying them, in situations where the employees are in a risk of any of such harmful disease, can help lower it and thereby increase their productivity. Some unique features of this project make it more suitable due to its memory and time efficiency, and user-friendly interface

ABSTRACT

Sedentary and poor sitting posture can damage the health of adolescents.

Therefore, it is very practical to effectively detect the sitting posture of employees in the

corporate environment and to warn the bad sitting posture. This paper proposed an in-class employee

sitting posture recognition system based on OpenPose, which uses the monitor in the

corporate environment to detect the sitting posture of the employees, and uses OpenPose to extract the

posture feature. Keras deep learning framework is used to construct the convolutional

neural network, which is used to train the datasets and recognize sitting posture of employees. Experiments show that the accuracy is more than 90% after 100 epoch training.

Realtime multi-person 2D pose estimation is a key component in enabling machines to have an understanding of people in images and videos. In this work, we present a realtime approach to detect the 2D pose of multiple people in an image. This bottom-up system achieves high accuracy and realtime performance, regardless of the number of people in the image.. We show that the combined detector not only reduces the inference time compared to running them sequentially, but also maintains the accuracy of each component individually. This work has culminated in the release of OpenPose, the first open-source realtime system for multi-person 2D pose detection, including body, foot, hand, and facial keypoints.

METHODOLOGY

The first step was to ideate and analyze the various aspects of the problem statement and listing down the necessities for implementation.

After analyzing all the aspects that were needed to be covered, we researched about them to get all necessary help.

While researching, we came across OpenPose that we found to be suitable for implementation of the system.

Using these resources, we created a model that could interpret the posture by lateral image analysis.

After implementing this, we proceeded to the real-time monitoring of the posture by extending the prebuilt model to capture images at regular intervals.

Finally, we created the driving code to keep the track of continuous wrong posture and notifying the same

CONCLUSION

This project developed a computer vision based sitting recognition system for finding

and correcting bad posture. The algorithm uses OpenCV to extract the video information

captured by the monitor. Then OpenPose is used to extract the posture feature of employees. A

convolutional neural network was built using Keras deep learning framework to train data sets. Finally,

the trained network model is used to identify the employee's sitting posture. Experiments show that the

accuracy of the test set is up to 90% . After actual tests, it can effectively identify the sitting posture of

employees in the corporate environment, help employees develop good sitting habits and promote

healthy living.