



**INFORMATICS
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**YOGA POSE CLASSIFICATION AND CORRECTION USING
DEEP LEARNING**

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ABSTRACT

Yoga is an Indian cultural exercise and meditation method that unites the mind and body. This is referred to as a medical method as well as an exercise/meditation method. Yoga can treat illnesses naturally while enhancing both physical and mental fitness. To maintain mental and physical fitness, it is very important to maintain a correct exercise procedure and perform each of the relevant poses correctly while engaging in yoga exercises. If someone performs incorrect postures for a long period it can be led to serious harm and long-term joint pains. There are ways to find out if the posture is correct or incorrect by wearable sensors. But it is hard to have wearable devices or sensors while exercising and also, and they are very expensive. So, there is a need for an application in order to perform correct postures.

So, the author's solution is to build a yoga assistant using pose estimation, which will classify and correct the user postures. In that process, the user has to upload a posturing video to the system or perform a posture in real-time, and then the system will extract the frames of the video, and using those frames the key points of the human body will be identified. Using the coordination of each body point the system will classify the performed posture and calculate the error. So, the user will know the posture performed and performed correctly through the system. For the classification of the postures, the LCRN model will be used, and for correction purposes, the media pipe deep-learning library will be used. This library will calculate the angles between body key points and according to the angles, the performed posture will be identified.

In the testing & evaluation phase, some domain and technical experts have tested and evaluated the system. For testing purposes, the system has been given to the general users who are domain independent and got the feedback. For the testing purpose of the model developed, models have been tested using confusion matrices, model loss graphs, and model accuracy and were able to get satisfactory results on them. In addition to passing through a black box testing procedure, the system's results were also evaluated.

KEYWORDS: Yoga, Pose Classification, Pose Correction, Key points Extraction, Mediapipe, Image Extraction, Key points, Pose Estimation, Deep Learning, Computer Vision