

# **YOGA POSE CLASSIFICATION & DETECTION USING TRANSFER LEARNING**

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## **Abstract**

This project focuses on the development of a yoga pose classification and detection system using two different deep learning models. The first model used for pose classification is Efficientv2s, which is based on transfer learning, where pre-trained models are fine-tuned on a new dataset to perform specific tasks. The second model used for yoga pose detection is YOLOV7 (You Only Look Once), which is a popular object detection model that can detect multiple objects in an image simultaneously.

The proposed system aims to accurately classify yoga poses and detect them in real-time. The model is trained on a large dataset of annotated yoga poses, which includes different variations of each pose. The dataset is collected from various sources, such as yoga websites and videos, to ensure the diversity and comprehensiveness of the data. The model's performance is evaluated using standard metrics such as accuracy, precision, recall, and F1-score. In the yoga pose classification stage, multiple deep learning models were trained and evaluated, including DensNet201, DensNet121, MobileNetV3, and EfficientNetV2S, to determine the best model for the task. The first model used for pose classification is EfficientNetV2S, which is based on transfer learning and has achieved an accuracy of 91%, precision of 91%, recall of 91%, and F1-score of 91%.

The results show that the proposed system can accurately classify and detect various yoga poses with high accuracy and can be used as a tool to aid yoga practitioners in their training and practice. The system can also be extended to other applications, such as fitness tracking and wellness monitoring.

**Keywords:** Deep learning, YOLOV7, DensNet201, DensNet121, MobileNetV3, and EfficientNetV2S