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A Survey on AI-Based Real-Time Yoga Pose Detection and Correction Systems

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Abstract: *The development of deep learning (DL) and artificial intelli- gence (AI) has revolutionized fitness technology by allowing real-time systems for correcting posture. Manual supervision is a major component of traditional exercise guidance tech- niques, which is frequently unavailable or inaccurate. Recent developments in computer vision, neural networks, and pose estimation frameworks have enabled intelligent systems with real-time feedback capabilities. This essay provides a thor- ough analysis of the main studies concentrating on the detec- tion and correction of yoga poses using AI. The study exam- ines the model architectures, datasets, accuracy, and constraints of current methodologies, including Vision CNN-SVM frame- works, MediaPipe, VGG16, Transformers (ViT), and Graph Neural Networks (GNNs). Lastly, it identifies research gaps and describes the path forward for developing a more reliable and user-friendly AI-powered yoga training system.*

Keywords: Artificial Intelligence, Posture Correction, Yoga Pose Estimation, Vision Transformer, MediaPipe, Deep Learn- ing, Computer Vision, GNN

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