

3D Human Motion Reconstruction over Cloud based Image Data via AI and Machine Learning

Authors : Kaushik Sathupadi, Sandesh Achar

Abstract : Human action recognition modeling is a critical task in machine learning. As, these systems re-quire better techniques for recognizing body parts and selecting optimal features based on vision sensors to identify complex action patterns efficiently. Various studies and methods have recently been proposed to track human action motions. Still, there is a considerable gap and challenges between images and videos, such as brightness, motion variation, and random clutters. This paper proposes a robust approach for classifying human actions over cloud-based image data. First, we apply pre-processing and detection, human and outer shape detection techniques. Next, we extract valuable information in terms of cues. We extract two distinct features: fuzzy local binary patterns and sequence representation. Then, we applied a greedy, randomized adaptive search procedure for data optimization and dimension reduction, and for classification, we used a random forest. We tested our model on two benchmark datasets, AAMAZ and the KTH Multi-view Football Datasets. Our HMR framework significantly outperforms the other state-of-the-art approaches and achieves a better recognition rate of 91% and 89.6% over AAMAZ and KTH Multi-view Football dataset, respectively.

Keywords : computer vision, machine learning (ML), random forest, human motion analysis, greedy randomized adaptive search procedure, spatial features

Conference Title : ICCISE 2024 : International Conference on Computational Intelligence and Software Engineering

Conference Location : London, United Kingdom

Conference Dates : October 17-18, 2024