Contribution ID: **51**   Type: **Poster**

Pose-Based Motion Analysis for Physical Exercise Quality Assessment

Thursday 24 April 2025 10:45 (30 minutes)

This paper presents a comprehensive approach to the evaluation of physical exercise using skeletal estimation and motion analysis. The research begins with the acquisition of relevant datasets and a review of existing monocular pose estimation solutions. A key component of this work is modeling important features, including skeletal joint weighting and key angles between them, according to their relevance for specific exercises. The synchronization of reference and analyzed recordings is achieved using Dynamic Time Warping (DTW), enabling accurate comparison and alignment.

We propose a method to determine the correct measure of consistency between reference and estimated trajectories, along with setting DTW distance thresholds based on performance quality. Finally, the effectiveness of the developed solution is assessed, and strategies for its optimization are discussed. The proposed approach offers valuable insights into improving motion estimation accuracy for exercise monitoring and analysis.

Author: JAKIEŁA, Wojciech (Politechnika Warszawska)

Co-author: Dr CHABER, Bartosz (Politechnika Warszawska)

Presenter: JAKIEŁA, Wojciech (Politechnika Warszawska)

Session Classification: Session B (Poster)