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Estimating Gait Parameter from Digital RGB Camera Using Real Time AlphaPose Learning Architecture

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Abstract : Gait analysis is used by healthcare professionals as a tool to gain a better understanding of the movement impairment and track progress. In most circumstances, monitoring patients in their real-life environments with low-cost equipment such as cameras and wearable sensors is more important. Inertial sensors, on the other hand, cannot provide enough information on angular dynamics. This research offers a method for tracking 2D joint coordinates using cutting-edge vision algorithms and a single RGB camera. We provide an end-to-end comprehensive deep learning pipeline for marker-less gait parameter estimation, which, to our knowledge, has never been done before. To make our pipeline function in real-time for real-world applications, we leverage the AlphaPose human posture prediction model and a deep learning transformer. We tested our approach on the well-known GPJATK dataset, which produces promising results.

Keywords : gait analysis, human pose estimation, deep learning, real time gait estimation, AlphaPose, transformer
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