Humans pose deduction and behavior analysis!

The capacity of AI is increasing to the point where we can now fairly precisely identify and monitor a human skeleton overlaying the human form. The capacity to analyze human (and animal) form in pictures for various purposes, sometimes called pose estimation, is remarkably potent.

Any activity can benefit from using our body position analysis. The possibilities for automatically evaluating human or animal movement affordably on a smartphone are vast, ranging from sports medicine and performance to physical rehabilitation and even illness and condition diagnosis.

Human Pose Estimation!

A method for recognizing and categorizing the joints in the human body is called Human Pose Estimation (HPE). In essence, it's a technique for recording a set of coordinates for each joint (arm, head, torso, etc.), which is referred to as a key point that can characterize a person's position. A pair is the relationship between these points.

Not all points can pair up since they must have a meaningful link. The initial goal of HPE is to create a skeleton-like representation of the human body, which will subsequently be further processed for task-specific applications.

Three different methods exist for modeling the human body:

- model based on skeletons
- model based on contours
- model based on volume

Applied human pose estimation!

Recognizing human posture and movements has long been in focus for major industries, including sports, retail, and entertainment. Here's a run-through of sectors where human posture estimation is in use.

Fitness!

As a result of the epidemic, more individuals are engaging in physical activity at home, driving up demand for fitness applications that can estimate human position. Fitness applications driven by HPE offer thorough live feedback on whether a user executes an activity properly. To do that, a human position estimate component compares a model created from camera video with a benchmark, resulting in a safer at-home exercise program. Yoga, dance, and weight lifting are just a few activities catered to by fitness applications with human pose assessment.

Professional sports!

Using human pose estimation technologies can help athletes perform better and help judges evaluate athletes fairly. Applications powered by HPE are used for various activities, including evaluating the quality of figure skating maneuvers, assisting soccer players in making accurate kicks, and improving the technique of high jumpers.

Gaming and filmmaking!

It has always been a laborious and challenging process to create animated characters. Human pose estimation is used today to make it easier. Now that a tracked body can be readily enhanced with graphics, textures, and other improvements, the graphics render organically even while the body is actively moving. Human pose estimation is used in interactive video games to record player gestures and translate them into virtual characters' actions.

Security and surveillance

Security camera video may be analyzed using human pose estimation to identify potentially troublesome circumstances. By identifying a human posture and calculating its anomaly score, security software powered by HPE can forecast suspicious behavior, spot persons who have fallen, or even detect people who could be ill.

Seven human pose estimation applications!

AI-powered personal trainers!

These days, maintaining our physical health has become essential to living a fulfilling life, and working with a qualified trainer may help us get to the fitness level we want. Unsurprisingly, the industry has been oversaturated with apps that use AI to improve fitness.

Robotics!

One of the development fields with the quickest growth has been robotics. Deep learning techniques can help, as training a robot to follow a routine can be laborious and time-consuming. Robots may be effectively trained using methods like reinforcement learning, which employ a simulated environment to reach the accuracy level necessary for a certain job.

Motion Capture and augmented reality!

The film industry, in particular, spends a lot of money on computer-generated visuals to produce spectacular effects, enigmatic creatures, fantastical landscapes, and much more. Because it takes so much work—such as wearing specialized clothing and masks to record motion, producing surface-level effects in the approximated position, processing power, and significant time commitments on top of that—CGI is costly. HPE can build a 3d rendering of a 2d input by automatically extracting important points, which may then be used to add effects, animations, and other things.

Athletes pose detection!

Pose recognition can assist players in honing their technique and getting better outcomes. Pose detection also enables analysis and understanding of the strengths and weaknesses of the adversary, which is crucial for professional athletes and their coaches.

Mock tracking for gaming

Pose estimation has fascinating in-game applications, where players may include poses in the gaming environment by utilizing HDPE's motion recording capabilities. The objective is to provide an interactive game environment.

Infant Motion Analysis

Motion analysis may pinpoint which muscles or joints need to be adjusted. Pose estimate can identify minute irregularities in the infant's movement, which the physicians can examine and treat appropriately. HPE may also be used to make recommendations to enhance physical capabilities so that the kid can have the most independence possible.