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Augmented Reality Dance Instructions

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Augmented Reality Dance Instructions

ABSTRACT

Users are provided guidance on physical activity such as dance by use of an augmented reality overlay displayed atop a user's own image. The overlay provides visual instruction, e.g., instruction on how to execute a dance move, to the user. Pose detection techniques are utilized to match the user's actual pose with that in the instruction. The overlay provides visual feedback to the user on how well the user's pose or movement matched that of the instruction.

KEYWORDS

augmented reality; dance instruction; overlay; pose detection; 2D pose; 3D pose;

BACKGROUND

Some devices include cameras that allow users to capture images or videos of themselves ("selfies"), e.g., cameras on a smartphone or tablet, an integrated camera in a desktop computer, a camera included in an entertainment console paired to a television, etc. Such cameras can be utilized for video calling, gameplay, and other entertainment purposes.

DESCRIPTION

This disclosure utilizes device cameras that face the user to provide dance instructions. For example, a user in front of the camera performs dance moves, with or without music. The user is provided a view of themselves dancing, e.g., on a television or other display.

An overlay is provided on the user video. For example, as illustrated in the figure below, the overlay is provided in the form of a stick person. Image objects like this overlay provide an augmented reality interface to give the user guidance related to dance moves, e.g., the user can follow along as the stick person moves. For example, the stick person overlay can be animated to

show a sequence of dance moves. Pose detection techniques are utilized to detect the users

instantaneous pose of the user as the user dances.
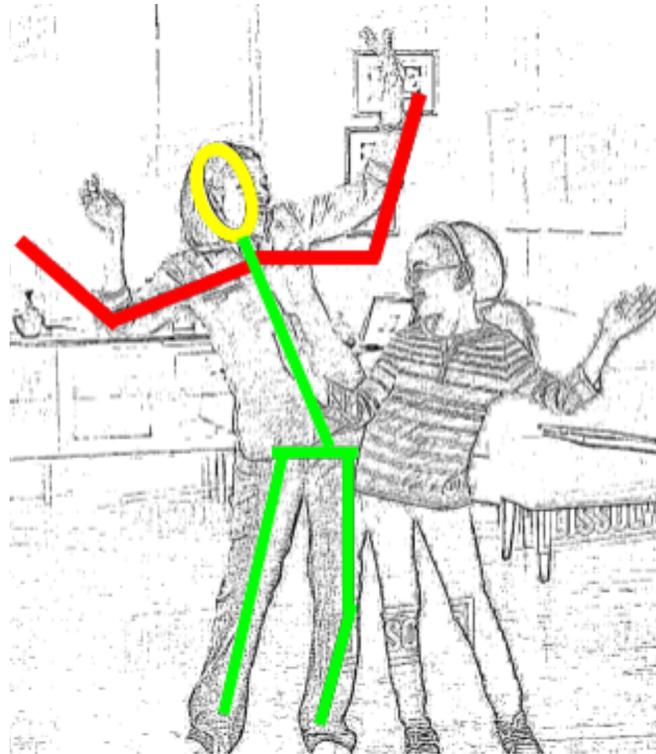
Based on how closely the user's moves match the overlay, the overlay is adjusted to

provide user feedback. For example, if the user's dance moves highly match the overlay, green

color is utilized to provide such feedback to the user. If the user's moves do not match well,

other colors are utilized for feedback, e.g., orange color for close but not perfect; red for a

significant mismatch; etc.

For example, in the figure above, the user's legs and torso have good alignment with the

instructions, and the corresponding portions of the stick person overlay are green in color.

Because the user's head position broadly matches the instructions, the corresponding portion of

the stick person overlay around the head is illustrated in yellow color. The user's arms are out of

alignment with the instruction, and therefore, the arms of the stick person overlay are illustrated in red color.

Depending on the camera and device capabilities, 2D/3D pose detection techniques can be utilized. For example, if the camera hardware/software supports depth sensing, 3D detection is utilized; otherwise, 2D detection is utilized.

To match the user's pose with that indicated by the stick person, the detected pose is provided to an augmented reality (AR) engine, e.g., that renders the stick person. The engine takes as input the stick person overlay, e.g., as one type of augmented reality effect. The pose is compared to the effect to determine the level of match. The AR engine renders the stick person with appropriate colors based on the match. Other ways of indicating the match can also be utilized.

Any other form of instructional and feedback interface can be utilized. Further, guidance can be provided for other purposes, e.g., stationary or moving exercise, and corresponding feedback provided based on pose detection. In this manner, augmented reality overlays can provide useful user experiences with devices that include cameras.

CONCLUSION

Users are provided guidance on physical activity such as dance by use of an augmented reality overlay displayed atop a user's own image. The overlay provides visual instruction, e.g., to execute a dance move, to the user. Pose detection techniques are utilized to match the user's actual pose with that in the instruction. The overlay provides visual feedback to the user on how well the user's pose or movement matched that of the instruction.