3D Animation framework for sign language

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Abstract

A critical part of animating a sign language using virtual avatar is to display a sign gesture having multiple rotational arm poses to identify a word instead of a single static arm pose. Sequencing a group of gestures related to a sentence requires each gesture in the middle of a sentence to be animated using different initial arm positions. Sequencing pre-captured arm videos, ordering preset animations compiled by 3D animations, and ordering motion capture data are the widely used techniques used by sign language animators presently. The transition from one word to another is not smooth as the initial and the terminating positions of each animation is not the same. This paper presents a technique with smooth transitions between gestures to animate a sign language. A sequencing technique is also presented to animate known words using gestures that are already defined and also to animate unknown words using character-to-character sign animation. New sentences are dynamically added in real-time and the system will adjust the animation list automatically by appending the required animations of the words in the new sentence to the end of the playlist. Results indicate an average distance of 3.81 pixels for 27 static pose finger spelling characters.

Keywords: Animation framework, Sign gesture animation, Virtual avatar, Gesture sequence model.