

Exchangeable Humanoid Animation Using H-Anim and Motion Capture Data

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Abstract. We describe a method for generating H-Anim character animation using general graphics tools and motion capture data. An H-Anim character model can be designed with a general graphics tool using a procedure that defines the skeletal hierarchy of a human character. The character model is then provided with motion capture data. H-Anim character animation is generated and displayed using a general X3D browser. The H-Anim character animation is obtained by converting captured motion data into X3D interpolator nodes. We have defined a conversion algorithm that provides H-Anim characters with motion by applying any motion capture data to the H-Anim character model. As well as an H-Anim viewer, we have developed an H-Anim editor that is used to display and edit the hierarchy of an H-Anim character model and also generate its animation interactively using motion capture data.

Keywords: Humanoid Animation (H-Anim), H-Anim character model, motion data definition, H-Anim character animation, X3D interpolators, H-Anim editor.

1 Introduction

ISO/IEC 19774 H-Anim (Humanoid Animation) [1] is an international standard that defines a data structure for representing and exchanging human models and animation through networks. Corresponding H-Anim bindings for Extensible 3D (X3D) Graphics are found in [2] which can be expressed in multiple language encodings and compressed binary syntax. The H-Anim specification also includes definition of keyframe and kinematic animation using X3D interpolators. Other animation methods using motion capture, and dynamic and other algorithmic animations, are also defined by converting all animation parameters into X3D interpolators.

Several research projects related to H-Anim have been done since its inception. Tools, such as H-Animator and Web3D Toolbox [3][4], have been developed to generate H-Anim character animation. Other research describes ways to generate H-Anim animation using keyframe, inverse kinematics, or motion capture data[5][6][7]. All this research was focused on the generation of animation using H-Anim models.