

Research on Building Sports Simulation Model Warehouse Based on the Poser Software Platform

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Abstract. Building sports simulation model warehouse is very helpful for us to know more about the law of sports movement and it can offer service for teaching, training, scientific research, physical movement design and achievement exhibition. In this paper, it introduces the characteristics of Poser software, the reason why choosing the software being the platform and the exploitation process of sports simulates model.

Keywords: Poser Sports Simulation, system building model, design and development

1. Introduction

With the development of science and technology, simulation has already become one kind of important technological means and a scientific research method of various complicated system engineering study. Sports simulation system has gradually brought great effects in sports field with the coming of 2008 Olympic Games and the foundation of Sports Simulation system Association.

The simulation of human body movement has also become a studying hot and difficult spot. The foundation of sports simulation model warehouse can not only simulate technical movement but also can be used to design and exploit new technical action (such as the arrangement of the group calisthenics and the generation of the gymnastics movement) and to analyze the technical movement as well. So it has a great significance on direction. It also can be used in more fields such as teaching, training, achievement exhibition and dummy classroom on line.

2. POSER system's characteristic

POSER means "to pose". It is a kind of software of 3-D role design and animation fabrication exploited by USA Curious Labs. It is the first and the most popular software that has been used for human body model till now. The poser software has issued 6 editions so far since 1995.

Poser has provided colorful human body 3-D models and a large amount of ready-made personages, animals and other roles. We can design human body model and action rapidly without troublesome human body building. Human body model of poser can also be changed into various types and pose according to the different needs. So they can be used to direct in design .We can rapidly finish making model human body pose that we want with poser's proper tools.

Poser can use IK (inverse kinematics) skeleton move system to carry out action design and step controlling. At the same time poser can also stimulate vivid light effect with the support of OpenGL hardware.

Personage in poser can pose and change expression freely according to our requirement,can be in various apoise clothing , can be represent by writing realistically, painting , iconograph and etc styles. It can not only change personage's posture and expression but also set up angles of light and lens of cartoon,and also can be used as a powerful animated cartoon implement .

Poser has been fitted excellent Plugs in connector that has realized controlling poser's background in 3

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DMAX , MAYA and lightwave .Using the outputing tool can make 2 D flash animated cartoons .With Viewpoint Media Playe ,3-D model can be issued on line. Poser has been added various core functions , motion blur and multi angle of view and program control that can be completely programmed.



Fig.1. Three-dimensional optic esthesia designs system



Fig.2. various form exports system

3. The reason to choose poser software platform to exploit sportss simulation model.

3.1 Human body model design is poser 's powerful function leading to succeed , multiangular three-dimensional optic esthesia system..

3.2 Poser has a lot of super-delicate personage , animal , article and 3-D model within itself , With them you can easily accomplish human body model and action design rapidly without troublesome job to build a model. Besides, there is great free resource on the network that you can use at any time.

3.3 The poser's personage model can be altered to various types and postures to show consummate detail ,They can be applied to required design directly.

3.4 POSER has powerful import and export function that can realize cooperation of main current three-dimensional software, such as 3 DS-Max, Mayas, LightWave and C4D. That greatly enlarge the ways to make personage model and design action. Poser can not only export various quiet picture, AVI and flash animated cartoon, but also issue real-time 3-D model on the net by Viewpoint Media Player's output function.(Fig.2).

3.5 Cost is cheap, requirement to system is not harsh, suitable for individual use, being "big fabrication of low cost"

3.6 Poser has extraordinary interface, even "gorgeous". You can mold vivid human body action attitude and expression very conveniently just by simple intuitionistic operation.

4. Poser's method how to develop sportss simulation model

4.1. poser's Step to exploit simulated model of sports

4.2. poser's concrete operating method to develop sportss simulation model. (Take simple run posture as example)

4.2.1 Choice of figure

First, choose the "File—new" order on the menu of poser 6.0 to build a new document;Then, choose the role who we needs from the role in the poser library ;Here takeing "Figgures—james—james" in the poser library as an example: Double click this icon or click the icon down right, then, the male person role "james" will appear in document window. (Fig.4)

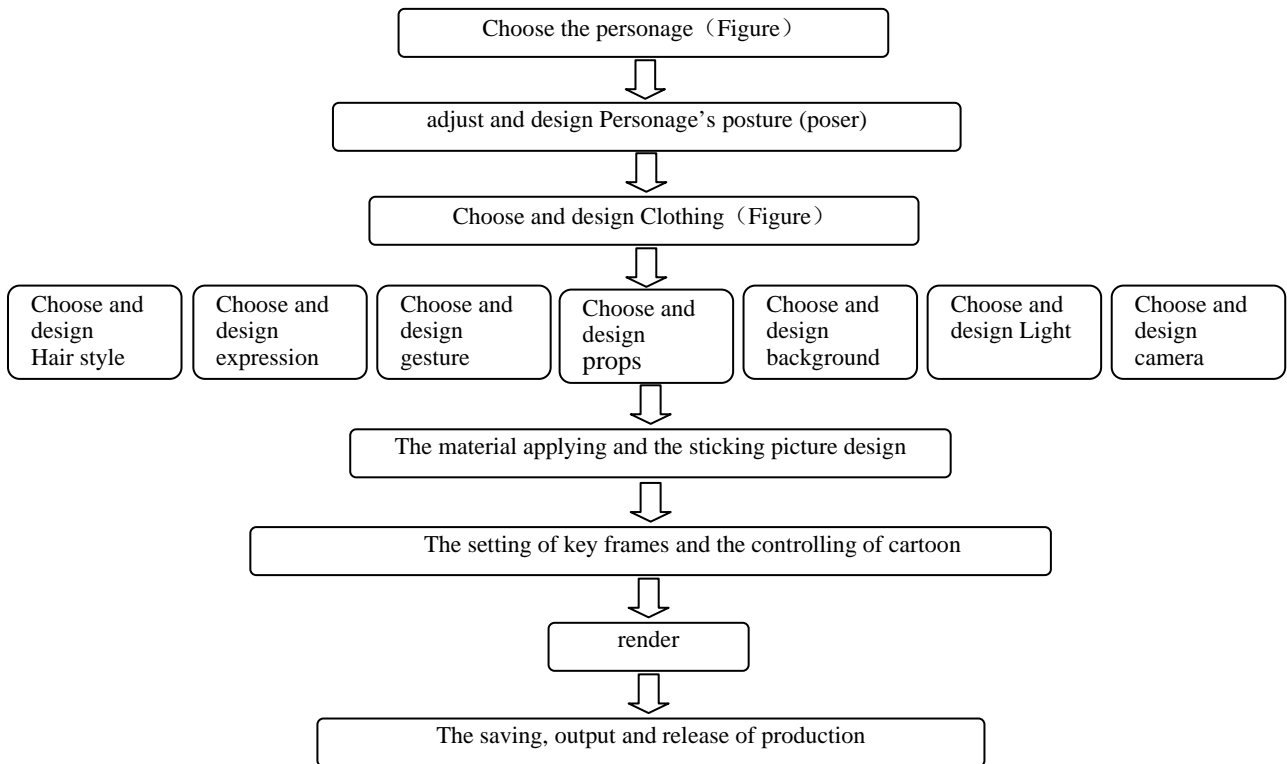


Fig.3



Fig.4 .Choice of figure



Fig.5 Choose pose directly from poser library



Fig.6 Adjust body posture by parameter

4.2.2.2 Adjust body posture by parameter

4.2.2.3 Adjust actions by editing tools



Fig.7 Adjust actions by editing tools

4.2.3 The choice and design of clothing

Choose “Props—james clothing” order to get suitable clothes ,shoes and socks from poser library. Sometimes we can’t get suitable clothes from poser library .So we can design and paste map ourselves by Material.We can also design dynamic clothing by poser software.



Fig.8 Effect graph after clothing render



Fig.9 Effect graph after hairstyle render

4.2.4 The design of hairstyles

Choose figure’s hairstyle by “Hair—james hair “order in pose’s library (Fig.9),or we can design paste Map in material library.

4.2.5 The choice and design of light (Fig.10)

We can use ready-made light or adjust light ourselves according to our requirement in poser. Fiure below is light controlling interface :open new light by click icon 1;delete new light by click icon 2; see current light detail on Parameter by click icon 3;change light’s color by click icon 4;adjust light’s brightness by changing Parameter on icon 5;choose lamp-house and adjust lamp-house’s position by controlling icon 6.We can change lamp-house’s angle to work space by dragging mouse after we have choosed a lamp-house.



Fig.10 The choice and design of light



Fig.11 The choice and control of camera

4.2.6 The choice and control of camera(Fig.11)

Poser has thirteen setting up cameras in advance, a new certain camera will be added according to certain lamp-house which we increased . We can set certain parameter alone for every camera.

4.2.7 Animation Setup

Various sports technic action can be imitated based on poser’s animation function. Flash can be added to background by controlling animation color palette and key frame. Reduplicative work in the animation setup course and the adjustment of every frame are not needed with poser. .Poser can not only be setted up key frame automatically,but also be added gestures. Even if being IK (Inverse Kinematics) link ,it can generate natural simple action when we build figures and make animated cartoon .

Click the icon below in poser’s interface to see the animation controlling bar (Fig.12).It can be used to set and preview animation’s frame. Poser’s frame default is 30 frame. Animation can be made after we change posers’ setting of posture , props , light and camera.



Fig.12 Animation setup bar

4.2.7.1 The technic of key frame

In poser, animated cartoon mainly made by the technology of key frame. Production can be animated by the technology of key fame .Open key frame editor by clicking the “Animation Palette “order on the menu. It can control every characteristic of the background ,such as figure’s element ,props ,light and cameras.

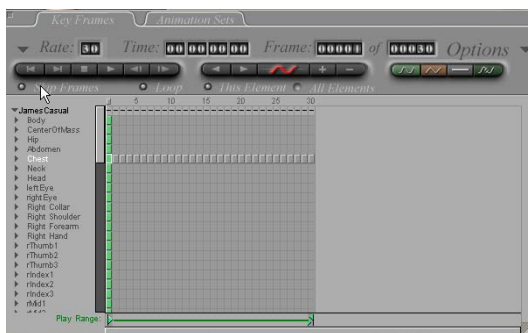


Fig.13 key frame editor

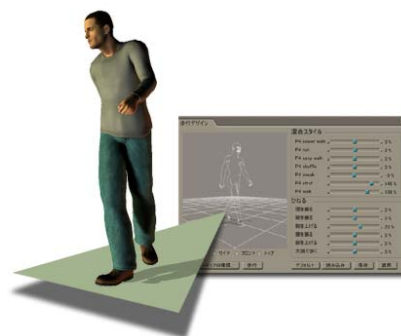


Fig.14 gait dynamic design animation

4.2.7.2 Dynamic design

We can make figure run or walk by dynamic design. Natural walking cartoon will be made in few minutes after the walking route has been set. Seasonal animated action can be made directly without troublesome operation when we take dynamic design , copy key frame and set circle Interpolation.

4.2.7.3 Add hand and expression animation directly from poser’s library .(Fig.15)

There have been set common applied standard data in poser’s library. Not only include the stop of body and hand ,but also expression animation.



Fig.15 cartoon of the shape of mouth and hand in poser's library Fig.16 Effect graph after the background render

4.2.7.4 Poser has more powerful animation function

In poser, automatic key frame can be set; Sound and expression of cartoon can be composed; Hand and expression can be animated. Poser has more powerful animation function, such as light and shadow , camera, props figure, part ,animation of figure and material, dynamic sound controlled by mechanics ,across animation, denticulate or linear key frame of normal or non-Interpolation, sound and channel display all by graph , preestablishing dynamic cartoon, previewing BVH animation, animation distortion, magnetization and airslake,etc.

4.2.8 The importing of background (Fig.16)

Poser6.0 has powerful background import function. It can import static figure and active background.

4.2.9 Render

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oser to render, We can get nearly natural effect graph after

5. :

se introduction



Resource : The track and field



Resource: Gymnastics

OLYMPIC GAMES



Resource: Martial art



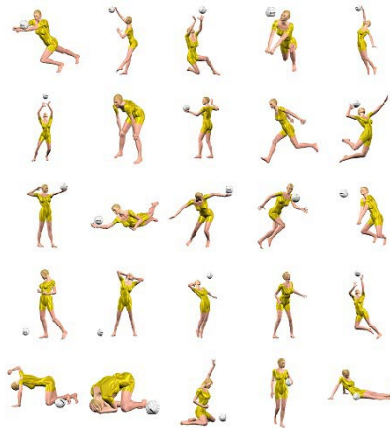
Resource: Football



Resource: Basketball



Resource: Eurythmics



Resource: Volleyball

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