BUILDING MOTION TRACKING IN 3D SOFTWARE

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Abstract: This paper gives idea about how build in live tracking animation is helpful to increase working efficiency of user in 3D animation sector. When working with 3D software it is hard to give motion to character. It takes a lot time to animate character. To overcome this problem our concept is about developing live tracing motion using web cam in 3D software so it will help animators to work systematically and efficiently.

Index Terms - 3D software, Maya, Live tracking animation, Motion capture.

INTRODUCTION

Motion tracking is the process of recording the movement of object or people. In filming and video game development it refers to recording action of human actors and later used to animate digital character model in 2d and 3d computer animation.

3D Maya is an application used to generate 3D assets for use in film, television, game development and architecture. Autodesk's Maya is one of the most highly used overall 3D creation packages. It’s used heavily in media and entertainment, with applications in many other areas. Modeling (the creation of 3D characters, props, and environments) is one of the key components of a 3D pipeline. But there are no any live motion tracking tool or setting as like inAdobe Animate. Using web cam we can directly capture motion and can be apply to character. This setting will make our animation easy.

Motion capture of computer character animation involves the mapping of human motion onto the motion of computer character. In 3d software like Maya if there are inbuild motion capture effect then we can make our project in less time. This setting will help to animate character easily.

Mapping can be direct such as human arm motion or indirect such as human hand and figure pattern controlling characters skin color or emotional state. After rigging the web cam will capture and track the live motion of person and apply automatically to the character.
In this research we study on ‘if we include live motion tracking using web cam in 3D software like Maya which makes easy to us for animate character. If we successfully implement this feature in 3D software it will provide easy way to work with Maya or any 3D software.

OBJECTIVES
1. How rigging is done without live motion tracking in Maya
2. How live motion tracking will be work in Maya
3. Advantages and Disadvantages of live motion tracking
4. Survey on ‘is live motion tracking is really helpful in maya’

[II] RIGGING AND ANIMATION IN MAY

Rigging is the process of creating internal digital skeleton and creating a basic relation between the mesh and bone skeleton. Animators have to add some controllers or the set of controls that can be pushed or pulled during creating animation. There are some settings or the tools or options to make linkage between skeleton and mesh such as parenting and hierarchies, which are used to create parent-child relation in mesh and skeleton.

Constraints which are used to build relation without changing hierarchical structure of object and constraints allows you to break relation down into smaller chunks. Joints are the transform mode they can be translated, rotated and scaled. Rotation order and gimble lock are rotation order refers to order of the operation in which the orientation of the selected objects. Animation controls allows you to bring every option together or everything together such as parenting, constraints, clean placement, rotation order etc. basically it is very difficult process for beginners and so much lengthy and time consuming also.

Beginners’ creates lots of mistakes while doing rigging and faulty riggings brings problems in animation which cannot handled easily. Talking about experienced persons, rigging needs so much efforts.

[III] WORKING OF LIVE MOTION TRACKING FEATURE

Motion tracking or live tracking is the process of recording the movement of object or people. Motion tracking will be different tab or panel along with rigging options and properties. Rigging will much easier to perform. There will be a chart having all body parts and bone joints of humans and animals. When we create new 3D model in Maya then we just need to select the particular parts and select the same part in default rig chart in Maya. It will create joints or bone structures automatically.

When rigging is done by this process new tab will open which is of web camera and microphone setting option. By doing such settings provided by Maya web camera will starting to capture movements by putting artificial nodes all over display of live motion. If we want to animate a model with side view same process will be followed by maya, but changing in rig chart. It will provide rig chart of side viewed character. Also, the same process of creating animation of animal and bird body.
Similarly, if animator wants to animate creature having mixture of human and animal body then maya will allow you to create the merged rig chart of human and animal body. Also, for the lip syncs there will be specific charts having standard mouth shapes. There will be manual mode for creating rig charts so animator can customize as per need.

Lastly motion tracking and rigging will easier as be compared to classical way of rigging and animation.

IV) ADVANTAGES AND DISADVANTAGES

ADVANTAGES:
- Implementation of live motion tracking will be easy for user for animation in Maya
- Require less time
- User can get more interest toward animating 3D character with webcam
- It will be more demanding
- It will be easier and convenience technique compared to animating 3D character using constraints, hierarchies, Animation controls etc.

DISADVANTAGE:
- Without live motion tracking you have to go through lots of technique to make linkage with skeleton and mesh.
- It is time consuming.
- For beginners, it is hard to rig character and animate it in 3D software.
- Beginners may lose interest in animating 3D character with these hard and lengthy techniques.
- It is hard technique compared to live motion tracking.

V) SURVEY ON BUILDING LIVE MOTION TRACKING FEATURE IN 3D MAYA

Survey Administration
The survey was conducted online in October 2020. Responses were requested from industry professional and students. Initiations to participate were send by email.
Results
Characteristics of survey Respondents
More respondents were beginner (42%) and 38% were comfortable with using Maya. Although major of our respondents currently use Maya at student level (58%).

Respondents demonstrated for what they are using Maya. More respondents were using Maya for modelling (92%), visual effects (22%), Texturing (48%). Within survey the major thing noticed even who are advanced using Maya are not very comfortable with Animation and Rigging of character. The vast majority of respondents were comfortable for only modelling character.
Although most of our respondents are students who are not very comfortable while using Maya for Animation or Rigging. Even those who are advanced in Maya are not comfortable with animation. The main survey question asked about the hardest part while working with Maya. Answers were provided with four categories “modelling”, “texturing”, “rigging” and “animation”. The vast majority of respondents about hard part in Maya were Rigging and Animation.

![Graph showing the hardest parts in Maya animation](image)

To overcome this problem, we suggested one solution for easy animation and rigging with Maya. With the new feature “Live motion tracking” animation will be easy compared to other techniques. Nearly equal proportions of respondents were satisfied or wanted building live motion tracking. The vast majority of respondents answered “Yes” (56%) and 40% of respondents answered “maybe” and only a few of the respondents answered “No” which means building of new feature will be really helpful.

![Pie chart showing the usefulness of live motion tracking](image)

**METHODOLOGY**

To develop new feature of live motion tracking in 3D Maya.
1. Collect the information about live motion tracking.
2. To study about rigging and capturing live motion through webcam.
3. Collect data from survey using questionnaire.
4. Searching applications of motion tracking.
5. Study on process of motion tracking on 3D model.
6. Study on frame by frame animation of 3D model.
MATERIAL -
The material requires to create an emergency application is,
1. Brief study about Autodesk Maya.
2. Knowledge of implementing new feature.
3. Drawbacks without implementation of new feature in Maya.

RESULT AND DISCCISION -
This feature will help us to animating rigged character in easy method. The Feature provides a webcam for capturing real emotions for character which is really a time consuming and effective method for any animator. With this feature you can instantly animate your character with live motion tracking.

CONCLUSION –
Perhaps the most notable finding of this survey is strong and beginner or professionals needed one easy animation techniques such as our new feature. Given that the survey focused on those who routinely use 3D Maya. It is not that respondents wanted less formation of this technique but rather that there was even stronger and more consistent support for building live motion tracking feature.

One interpretation of the result on building live motion tracking feature is that current program do an adequate job at teaching more easy concepts towards animating 3D character.

In general, respondents aggregated on the topic of “building live motion tracking” feature in 3D Maya.

ACKNOWLEDGEMENT
It is a great pleasure for me to present a research paper on “BUILDING MOTION TRACKING IN 3D SOFTWARE. I would like to express my deepest gratitude towards my guide PROF. AJAY CHAVAN of the Department of Animation Science, YCIS, for this immense encouragement, guidance and support.

Last but not least, I would like to thank all members of Animation science in accomplishing this research paper.

VEDANTI SANJAY YADAV ARTI ADHIKRAO PAWAR

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