CS775 2023 - Character Animation and VFX in Blender

Part 3: Video Recording, Camera Tracking and VFX

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Declaration

The entire code of this assignment is purely our own work and we have not taken any assistance from other students or copied the code from internet and at any point of time we both will be able to explain any part of the code that I have written.

1   Camera Tracking

As part of this assignment, I captured a video of a flat surface and then used Blender's motion tracking capabilities to track features in the video to solve for camera motion. I initially used the automatic keypoint detection feature in Blender, but I had to clean up the tracking points to reduce the camera solve error. Finally, I was able to achieve an error less than 1, which was a satisfactory result.

2   VFX

Next, I focused on adding visual effects (VFX) to the video. I imported a character model into Blender and placed it in the scene, defining and correcting for the ground. While animating the character using the keyframes created in the previous part of the assignment, I found it challenging to keep the character within the camera viewport. To address this, I modified the character's animation to reduce unnecessary movement and keep the character mostly stationary while performing actions within the viewport. I animated the character for approximately 300 frames, while the total frames in the recorded video were around 900. As a result, the animation sequence was looped three times in the final video.

3   Lighting

Blender's motion-tracking capabilities automatically detected the light source in the captured video, which was then used to light the augmented character. The character model was lit to match the lighting conditions in the original video, which added to the realism of the final result.

4   What gave away that fact that the video is augmented

Despite our efforts to make the augmented character blend in with the real-life video footage, several factors still made it apparent that the video was augmented. One factor was the difference in texture quality between the recorded objects and the augmented character. Additionally, the lighting strength was not perfect, and the character's size was not realistic, further emphasizing the fact that the video was augmented.

5   References

1. Blender Tutorial: "How to Camera Track in Blender for Beginners"

2. Mixamo: For obtaining animations