VIRTUAL REALITY AVATAR CREATION WORKFLOW

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Virtual reality (VR) is a world created by technical means, transmitted to a person through his senses: sight, hearing, touch and others. VR simulates both the impact and reactions to the impact. To create a convincing set of reality sensations, computer synthesis of VR properties and reactions is performed in real time. VR objects typically behave closely to the behavior of similar material reality objects. The user can influence these objects in accordance with the real laws of physics. However, to overcome the limitations of real life, VR applications can resort to the use of virtual reality avatar (VRA). The latter can be used as a virtual guide, as a playable character in games, as an acting character for movies and cartoons etc. A VRA can be realized using two software programs Blender and Unity.

First, the Blender creates the base, namely the body of the VRA itself; depending on the project the complexity of the VRA's mesh changes. Next an armature is added to the created VRA body to bind the mesh to the armature by assigning the armature as parent and the body as its child. Then blend shapes (BS) are created. BS are used to implement lip-sync, which is based on a script that converts the recorded speech signal into facial animations. BS are also used to add face small animations. The next steps in VRA creating will be to create clothes and attach it to the VRA as it was done before with the body and also customizing the physics of the clothes for better realism. Now the only thing left to do is to export the 3D avatar in FBX format. After completing all of the above steps, you can move on to working with the Unity software.

In Unity you need to create a project using the 3D Core template. Next step is an import of the VRA model with the animation type humanoid and then also check if there are any bones missing in the armature. Once the VRA has been successfully imported, it should be placed on the stage with a material replacement by selecting the appropriate shader, adding the necessary texture and texture map to it, selecting the cull mode and customizing visual characteristics such as glow, shadows and so on. After fixing the materials, the physics of hair or clothing should be customized, accompanied with setting up the viewpoint, lip-sync and additional animations by importing the VRA descriptor script into the project. The view point in the VRA's head should be placed between the eyes. You need to import pre-prepared BS for lip-sync and customize the eye movement animation by setting positive and negative values for rotation states.

The last to do is to place the created FX controller in the game layers, in which the corresponding pre-recorded animations of emotions are placed which were created with BS. The controller is used to control the emotions of the VRA. Now the VRA is ready for use.

In such a way, the rapidly developing VR technology is becoming more and more accessible. The only disadvantage of VR is expensive equipment but it is compensated by the wide span of opportunities that VR provides.