

COSC422 Assignment-2

Due: 18 Oct 2019

Common Issues, FAQs

Assimp post-processing preset



- Do not use “aiProcess_Debone” as one of the presets.
- The above preset is needed only for skeletal animation (Ex. 12) where “bones” are not used. Character animation requires bones.

Global transformations

- The character model's global translations are stored in the position keys of the root node of the joint hierarchy.
- The position keys specify movement of the model in world space (eg. Kneeling action of the dwarf model)
- ➔ • In some cases, the position keys may contain random data (eg. Mannequin's animation, nodeName = free3dmodel_skeleton). This data should be ignored or set to 0.
- ➔ • The translational motion corresponding to walk, run sequences may not be available in the position keys. If the position keys do not contain this information or their values have been set to 0, the model will need to be translated using `glTranslatef()` function.

Joint transformations

- Joint nodes excepting the root node will *usually* contain only one position key and multiple rotation keys.
- ➔ • Some models (eg. Dwarf.x) may contain joints with multiple position keys with minor variations in joint positions.

Keyframes

- The number of rotation keys (channel->mNumRotationKeys) will *not always* be equal to the number of ticks (anim->mDuration + 1). Eg. Dwarf.x. Corresponding to each tick (mTime), there may not exist a rotation key. Rotation keys will need to be interpolated between keyframes as shown in slide [9].24.

Assimp matrices

- Assimp matrices have dimensions 4x4. Vertices and normal vectors have only 3 components. Use the method given in slide [9].23 to transform points and vectors.
- • If `m` is a matrix, `m.Transpose();` will modify 'm' with its transpose. Do not use statements such as `n = m.Transpose()` to transpose a matrix. Same applies to `Inverse()`.

Model textures

- ➡ • The path names for textures stored in model files may not be valid (eg. ArmyPilot.x). Please override the path names in the `loadGLTextures()` function.
- ➡ • Some mesh objects may not have texture coordinates (eg. the mesh for the gun model in ArmyPilot.x), and therefore it may not be possible to map the supplied texture on those objects.

Shadows

- Please use the method for rendering planar shadows on the floor plane.
- The floor plane should be shifted towards $-y$ by a small amount to avoid z-fighting artefacts.
- Shadow polygons are always drawn at $y=0$. If the model and the floor plane have been translated to a different location, the shadow of the model may not be visible.

Animation Retargeting

- Transfer only a few of the joint angles from the source sequence to the target. Do not copy position keys.

Target: Dwarf.x

Source: avatar_walk.bvh

- Requires the following mappings:

tick_target -> tick_source (a simple linear scaling)

channel name of target -> channel number of source



- The global transformations of the target may have to be modified when another animation is mapped to it.
- The bind pose of models are not the same. This may cause problems if you map the rotation angles for the shoulder joint.