FRIEDRICH-ALEXANDER
UNIVERSITÄT
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Computeranimation

Appendix B – Application Skeletal Animation

LGDV
COMPUTER GRAPHICS • ERLANGEN

Skeletal Animation

1. Download Application3_Stub avatar.off and avatarAtt.txt
2. Read and Understand the Bone, Joint and Skeleton strucutres in skeleton.h, skeleton.cpp
3. Read and Understand the Attachment and Mesh structures in main.cpp

Skeletal Animation

Load Attachment

Affected Location: loadMeshAndRig()

1. **Open the file „../Media/avatarAtt.txt“ using std::ifstream to parse attachments from**
2. **parse each line of file (contains attachments for each bone).**
3. **Each attachment greater MERGE_EPSILON has to be added to the list:**
4. **Initialize boneId, weight and local position for this attachment**

Skeletal Animation

Display skeletal mesh

Affected Location: display()

1. **Declare a local vertex-list (std::vector<vec3> …) with the same size as the mesh. Init each element with the vec3::Zero().**
2. **Calculate the final position for each vertex out of all affected bones**
3. **Update the normals for the new vertex positions**
4. **Update the render model with the new structures (renderer->getPtRenderable(„mesh“)…)**

Skeletal Animation

Apply Relative Rotation

Affected Location: Mesh::rotateBone(unsigned int boneId, vec3& angle)

1. **Implement the method to realize relative bone rotation**
2. **Use the method Skeleton::setBoneRotationAngles(…)**

Skeletal Animation

Connect Relative Rotation to key events

Affected Location: key(…)

1. **Implement some bone rotations attached to key press events**

CHALLENGE

1. **Implement a simple linear Keyframe Animation for some bones using Data structures from the Exercise1 code (Keyframe, idle method, …)**