

Nvidia PhysX upgrade and APEX integration

CSCI 522 : Game Engine Development

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Objectives

- Upgrade to latest PhysX version
- Test the PhysX plugin for Maya
- Test the APEX asset pipeline
- Implement basic APEX Framework
- Implement one of the APEX modules

PhysX Upgrade

- Upgraded from PhysX 3.1.2 to the latest PhysX 3.2.1 which supports APEX 1.2.1
- New PxFoundation class was needed for PhysxSDK creation

PhysX plugin for Maya

- Allows creation of PhysX (2.x and 3.x) assets
 - Rigid bodies
 - Constraints
 - Ragdolls
- Can create APEX Cloth
- PhysX viewer

Exporting and Importing PhysX Assets

- PhysX assets created using the PhysX plugin can be exported in a binary or xml format.
- PhysX provides a serialization API for importing a binary format asset file.
 - The PhysX 3.2.1 documentation says that the serialization API has seen major changes from PhysX 3.1 to 3.2, with work still ongoing. As the API is not yet finalized no migration documentation has been provided.

APEX Framework

- Builds on top of the PhysX SDK
- Interface through a set of user defined classes for Renderable asset creation and rendering
 - GGEApexRenderResourceManager
 - GGEApexRendererMesh
 - GGEApexRenderer

APEX Asset Pipeline

- Apex PhysX Lab
- Allows creation of Destructible Objects, Particle Effects, and Apex Scene
- Exports as either Apex binary or xml file

APEX Modules :

Destruction and Cloth

- Integrated both modules
- Can import Destructible assets generated from the PhysX Lab tool
- Uses the generated Vertex, Bone, and Index buffers to generate an Ogre Manual Object for our scene

Objectives Accomplished

- Upgraded to PhysX 3.2.1
- Got the existing GGE PhysX demo working with the upgraded PhysX version
- Created and exported PhysX static and dynamic rigid bodies using the PhysX plugin for Maya
- Created and exported destructible APEX assets using the PhysX Lab

Objectives Accomplished

- Implemented the basic APEX framework
- Partially implemented APEX Destruction module.
- Were able to import and render APEX destructible assets
- Partially implemented APEX Cloth modules
- Were able to import and render APEX cloth



Thank You