Autodesk MotionBuilder 2013
Programming in MotionBuilder || Focusing on Python

Naiqi Weng, Developer Consultant
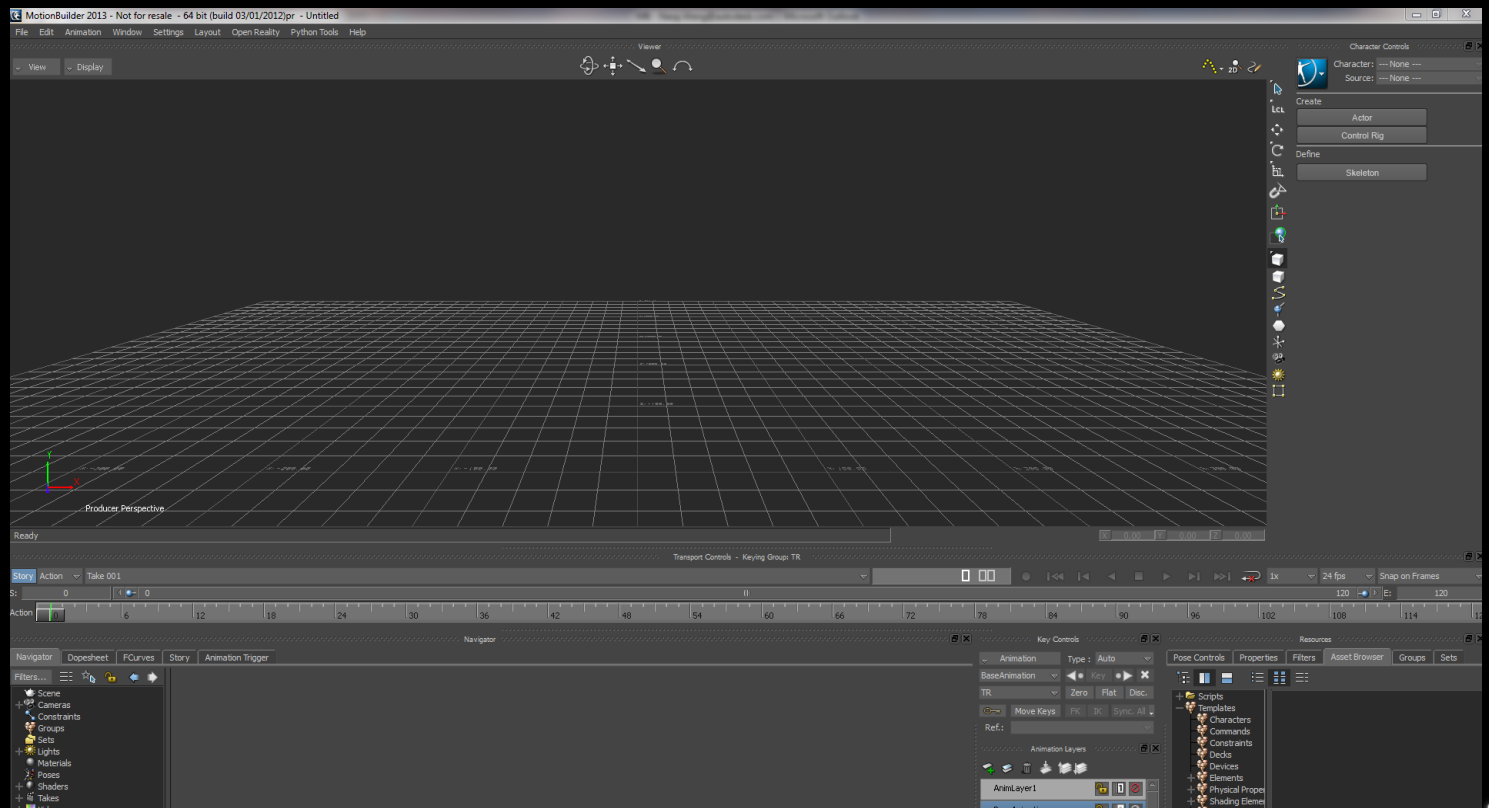Autodesk Developer Network

Module 1

MotionBuilder Programming Introduction

Module 1

Welcome to MotionBuilder 2013

Module's Agenda

- Introduction to MotionBuilder
- Why use Programming in MotionBuilder
- Python Introduction
- What distinguishes Python from the OpenReality SDK?
- How do they both fit in Autodesk MotionBuilder
- Help Documentation
- Code Samples
- Additional Learning Resources
- Software Problems or Wish list Items
- Assignment

Introduction to MoBu

- Industry-leading, real-time standalone 3D character animation
- Designed for 3D data acquisition, manipulation, and visualization
- Complete set of animation tools for key-framing to live motion capture performances
- Built on a real-time 3D engine, similar to a video game engine
- Integrates with 3ds Max, Maya, XSI, Cinema4D and other 3D tools via FBX

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History of MotionBuilder

- MotionBuilder was created by the company called Kaydara

- Was first called FilmBox which started in 1996

- Created as a specialized solution for applying motion capture data to characters

- Branded as MotionBuilder in 2002 (V. 4)

- Kaydara was acquired by Alias in 2004, which in turn was acquired by Autodesk in 2006

- Currently we released MotionBuilder 2013

Where is MoBu today?

Video Game Development

- The majority of AAA publishers use MotionBuilder
- Tier 2 developers to keep their edge on Next-Gen titles

Film / TV

- Used on a long list of blockbuster productions by some of the largest facilities in the world
- Episodic TV content rendered directly out of MoBu

Live Performances

- Live CG hosts
- Performance driven events

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Why use Programming in MotionBuilder

- Automate repetitive, time-consuming tasks and extend features

- Uses popular, easy-to-use Python scripting language

- The C++ SDK to create custom tools and features that plug directly into MoBu

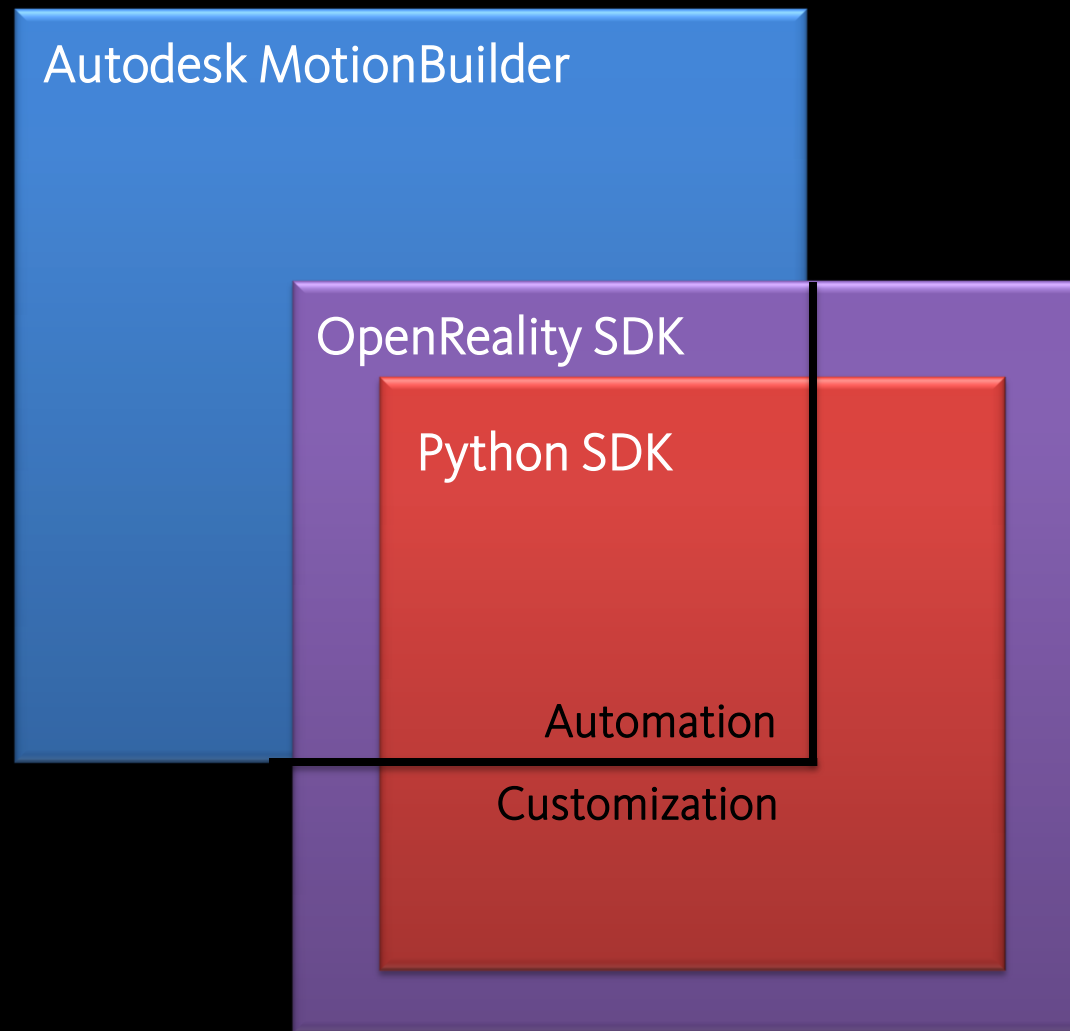- Create project-specific functionality, for specific workflows and requirements, including custom file types.

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What is Python all about?

- Object Oriented

- Open Source

- Mostly Interpreted

- Used for Both Standalone programs and Scripting Applications

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Introducing the SDKs

- Two Available MotionBuilder SDKs
  - Python SDK
  - OpenReality SDK
    - C++
- Python SDK is a wrapper on top of the OpenReality SDK

How do they fit in MB

Autodesk MotionBuilder

OpenReality SDK

Python SDK

Automation

Customization

To Use or Not to Use Python
...that is the question...

- Advantages:
  - Quicker Development Cycle
  - It is Extremely Portable
  - Large number of existing modules
  - No need of hassle with pointers
- Disadvantages:
  - Possibly Slower language compared to C++
  - Discloser

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Advantages of OpenReality

- Can be 10+ faster than Python
- More classes and function exposed (custom devices, manipulators, FBX import/export)
- Can derive from existing classes, e.g. FBBox, FBConstraint, FBDevice, FBShader, etc.
- Casting objects to a more specialized class to access specific functions
- Compiled dll makes code hidden
- C++ code can execute Python scripts, but not the other way around.

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Help Documentation

- Online Documentation
  - www.autodesk.com/motionbuilder
  - www.autodesk.com/developmotionbuilder
- User Help separated with SDK Documentation
  - www.autodesk.com/motionbuilder-sdkdoc-2013-enu

Documentation Structure

MotionBuilder 2013 User Help
- MotionBuilder Help
- What's new in this release
- Changes in MotionBuilder 2012
- Tutorials
- User's Guide

MotionBuilder 2013 SDK Documentation
- SDK Programmer's Guide
- C++ Reference
- Python Reference

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Code Samples

- Python examples
  - ..\Autodesk\MotionBuilder 2013\bin\config\Scripts
- OR SDK examples
  - ..\Autodesk\MotionBuilder 2013\OpenRealitySDK\Samples

More Learning Resources

- Autodesk MotionBuilder Developer Center
  - http://www.autodesk.com/developmotionbuilder

- Autodesk MotionBuilder Forums
  - http://area.autodesk.com/forum/autodesk-motionbuilder/python/

- MotionBuilder Python Tutorials

- Web Resources for Python

- Books

Let us know about MoBu Defects or Wish list Items

- Log software defects here:
  - www.autodesk.com/motionbuilder-bugreport
- Log software wish list items here:
  - www.autodesk.com/motionbuilder-sug

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Assignment

- Familiarize yourself with:
  - Documentation
  - location of the examples
  - the external resources that are available

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Next Agenda

- Working with the Python Version
- Navigating MotionBuilder Install folders
- How to Execute Scripts
- The Python Editor
- Programming Preferences
- MotionBuilder Python Modules
- Starting to Build Code for MotionBuilder
- Helpful Coding Standards
- Assignment

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