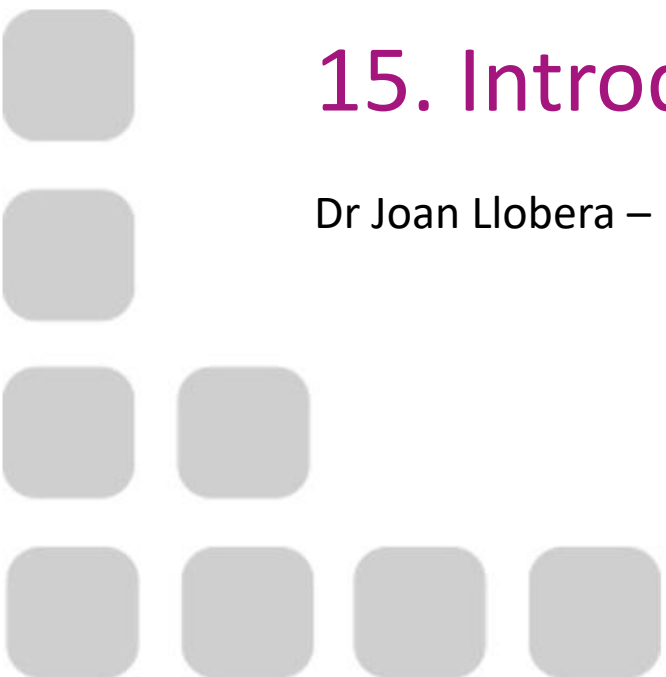


Animation Foundations

15. Introduction to Motion Builder

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Introduction to Motion Builder

- Motion Builder is part of the Autodesk suite
 - It works well with 3D studio max
 - It works well with Maya
- It integrates keyframe-based animation, forward and inverse kinematics, constraints and some physics-based simulation
- It allows scripting with Python and C++

The animation pipeline





<http://optitrack.com/support/accessories/motion-capture-suit-care.html>

NICON





Animations in a game project

- Current animation engines are based on hierarchical state machines
 - Mecanim for Unity
 - Persona for Unreal

An example:

<https://assetstore.unity.com/packages/templates/tutorials/mecanim-gdc2013-sample-project-9896>

- Upcoming animation engines may be based on Motion Matching Animation
- Plugin for Unreal from FilmStorm
- Kinematica announced for Unity – not available yet

<https://www.youtube.com/watch?v=qBbCjuJpE9o>

<https://blogs.unity3d.com/2018/06/20/announcing-kinematica-animation-meets-machine-learning/>

https://www.youtube.com/watch?time_continue=11&v=ayrDupnR7Yc

Exercise 1. The Mecanim animation engine

- Download the Mecanim sample project from GDC 2013.
- Look how the state machines are organized
- Look at how transitions are triggered between animations
- Look at what animation files look like

<https://assetstore.unity.com/packages/templates/tutorials/mecanim-gdc2013-sample-project-9896>

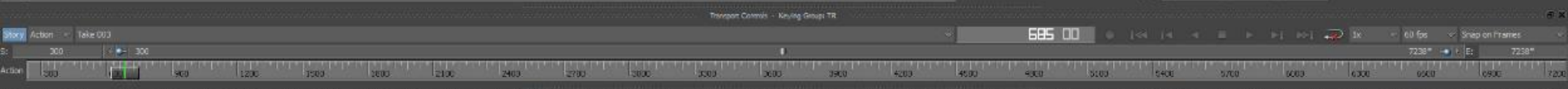
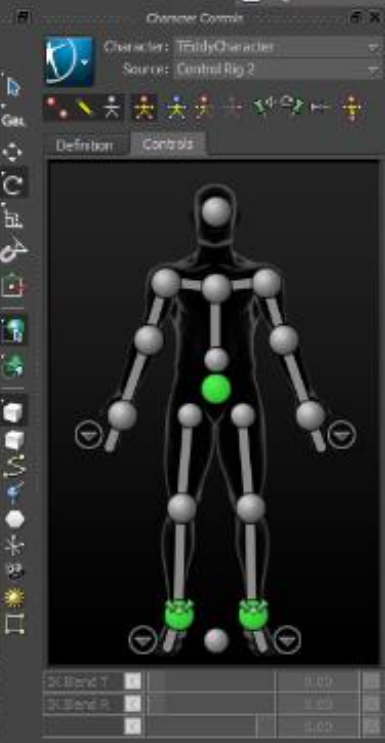
Example: make the character die instantaneously when pressing a key

Introduction to Motion Builder

Motion Builder has 3 main components

- The skeleton. Matches motion data with a bone topology
- The character. It allows transferring animations between characters (even with different skeletons!)
- The control rig. Allows adding movement

COURSE_PART1\3.tutorial_transfer_anims_teddy_grows\0.Motion_Builder\0.Scene6-Take 003_AidaNewTeddy.fbx



Character Definition Character Settings

Character 1

Characterize

	Mapping List	Naming Template
Hips	pelvis01	<Not Set>
LeftUpLeg	left_thigh01	<Not Set>
LeftLeg	left_knee01	<Not Set>
LeftFoot	left_ankle01	<Not Set>
RightUpLeg	right_thigh01	<Not Set>
RightLeg	right_knee01	<Not Set>
RightFoot	right_ankle01	<Not Set>
Spine	chest01	<Not Set>
LeftArm	left_arm01	<Not Set>

Control Rig 1

Create Delete

Animation Type: Auto

BaseAnimation

TR: Zero Flat Disc

Move Keys: [K] [L] [M] [N] [O] [P]

Ref:

Animation Layers

BaseAnimation

Weight

Pose Controls Properties Filters Asset Browser Groups Sets

- PrevAnim
- Scripts
- Templates
- Characters
- Commands
- Constraints
- Decks
- Devices
- Elements
- Physical Properties
- Shading Elements
- Solvers
- Tutorials

Activate Windows
Go to Settings to activate Windows.

Exercise 2.

- Open the file
1.animsource_to_retarget_Scene6-Take 003.fbx
- Import the teddy model (use Merge, add a namespace called Teddy, remove the Take)
- Characterize the Teddy
- Plot the animation of Aida

- Use the control Rig to modify one key frame. For example, lift an arm of the teddy, while he dances.

To do this, select a joint of the control rig, create a new layer, and in the first frame create a keyframe.

Then, in Character settings, plot the control rig to the skeleton.

- Export the animation (Motion File Export) and make a Project in unity that triggers the animation when pressing a key

Exercise 3. Motion transfer in Motion builder

1. Create a character in Autodesk Character Generator
2. Follow the tutorial to transfer the animation from the actor to your character
 - Use the indicated source file and tutorial
 - Use the first method (Quick and Dirty)
3. Play your animation in Unity.
4. Add the same animation to the Teddy Bear in Unity. Put your character and the Teddy Bear doing the same movements in unity. Which differences do you notice?

<https://charactergenerator.autodesk.com/account/myavatars.aspx>

Animation Files:

<https://assetstore.unity.com/packages/3d/animations/huge-fbx-mocap-library-part-1-19991>