January 11, 2018

Fundamentals of Rigging

Forward Kinematics (often called FK) – the primary and stable way of rigging, and can be used in any circumstance. Works on the principle of Hierarchy.

Hierarchy – Parent to child relationship. The child follows everything the parent does, can have a child of their own. For example: When the shoulder swings, the arm moves with it. The next joint (the elbow) would be the child to the shoulder. It follows the movement of the shoulder, but create its own movement.

Joints – a series of rotation points. (Shows you the spot of main hierarchy) These you can rotate, scale and move.

Joint placing - Press “D” to create the pivot point. Drag pivot point to the place you want the object to pivot.

Root node -

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Joints – Pivot point working with Hierarchy (Absolute – where geographically the object is - and Relative – where the object is relative to the Hierarchy - spaces)

Very important to remember that the Relative space is concerned with the parent.

Orientation – Z= Perpendicular X= Down Y= Up

Deform>Cluster After selecting whatever needs a pivot, the cluster tool will place one right at the center. (Especially if the objects needing to be rigged is not following a straight x/y axis)

Scene Orientation

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F3 to change things to Rigging mode

Constraints – Creates a node for the object

Parent- Translation and Rotation, but not scale. The child’s actions will follow the parent’s actions. (This one will be used the most)

Point – Translation - will always snap back to this particular position to parent.

Orient – Rotation – will snap back into the position according to the offset.

Scale – Scale – will maintain the scale, always check the offset. (Normally set to (0,0,1)

Aim – Rotation- but a little different. It essentially always looks at something. Perfect for eyes.

Controls

Always click on the constrainer, then the constraintee. The circle first, then click on the joint.

Gimbal Lock

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Joint placement/orientation

Match transformations to make the groups work.

Controls orientation – control group, just an empty space that you can control.

Ctrl “G” creates an empty group as well.

Scene organization/conventions – Joint – Jnt, Control – Ctrl, Group – Grp, Geometry - Geo

Lamp rig

When joining the controls, joints and Geometry… Click on control, (not the group) then the joint. Click on constraints – parent and scale. Click the joint, then the Geometry. Click on constraints – parent and scale.

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When wanting to change the actual size of the joint circle, make sure to change the radius in the attribute editor.

Skeleton – Hip, make sure to place two joints at the hip. (COG jnt is the root to everything, and should also be placed at the hip bone)

Skeleton, mirror joints – Select orientation according to the world values. Behavior is the mirror that brings the arms together. Orientation is the mirror that turns the arms like car tires. L\_ to R\_

When mirroring, you just need to select the Shoulder joint to mirror the whole arm. It will connect the collarbone to the new shoulder.

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IK Rigs – After putting a simple hierarchy down, (make sure to zero out the children) click on skeleton (rotate plane solver) Create IK Handle

White arrow, vector – Should be pointed in the direction you want the elbow or knee to point.

Pole Vector constraints – The pole vector will always point to the object.

IK Handles

Control/Locator first, then click the Handle to constrain. Point constrain

Make the Locator a child to the elbow, so that you can zero out all the transformations. That way the orientation is aligned. This is the one that you do pole vector constraint.

L\_Arm\_IK\_Main\_Ctrl\_Grp (This is to help organize the constraints with the Pole Vectors and the IK. Arms together, and the legs together, etc.)

IK\_Ctrl\_Grp

PV\_Ctrl\_Grp

Shoulder\_Ctrl\_Grp

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