

Inverse Kinematics

About

An animation script aimed at controlling a limb's rotation (such as an arm or leg) in such a way so the hand or feet stays on top of a target position.

Common use is to have arms holding a steering wheel; holding a two handed weapon procedurally; and so on.

Limitation: only works with two segment limbs.

How to apply

Warning: Executes in edit mode. Be sure that your scene is saved before applying script.

First thing is to apply the InverseKinematics script. It is recommended somewhere on the character, such as the root object, or character's upper arm. Which object it's applied to, doesn't play a role in IK's calculation.

Then establish what bones take part in the IK, there are five parameters: Upper arm, forearm, hand, elbow, and target.

Upper arm, forearm, and hand, are bones of the character model. If it's a leg simply choose thigh, calf, and foot, respectively.

Elbow is an empty object, this object is used as an overall the direction where the elbow should face. It is highly recommended this object is parented to the torso, so it follows the character; and also should be positioned well behind the character (or forward of the character if it's working as knee's orientation). Wherever you place this object, the limb bends in that direction.

Target is also an empty object, and it's the position where the hand will land as long as it's within reach of the arm.

Once all five parameters are set, the script will start running. Ideally your character's bones are facing Z+ axis, but this is often not the case. When

that happens, you simply need to adjust the rotation offset parameters for upper arm and forearm.

Because the script has no way to know how a character is rigged, you will need to set the offset values manually, until it looks as desired.

Tip: Before proceeding to edit rotation offset, position the target object well away from the arm, enough so the arm should end up straight after you set offset.

First set the “Upper Arm_Offset Rotation” parameter. Slide X, Y and Z, until upper arm facing the target, and also elbow is facing the elbow object.

Repeat for “Forearm_Offset Rotation”.

Once you’re done, you should be able to move the target object, and see the arm always follow the object.

Finally, there’s a “Hand Matches Target Rotation” parameter, that will make hand’s rotation equal to the target object’s rotation.

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