UE4 C++ CODE PLUGIN – ANIMATION WARPING

by Berkay Tuna

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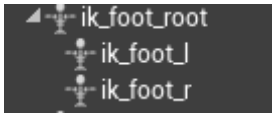
Introduction

This plugin contains 3 Skeletal Control Nodes for realistic movement. Speed Warping, Orientation Warping and Head Compensation.

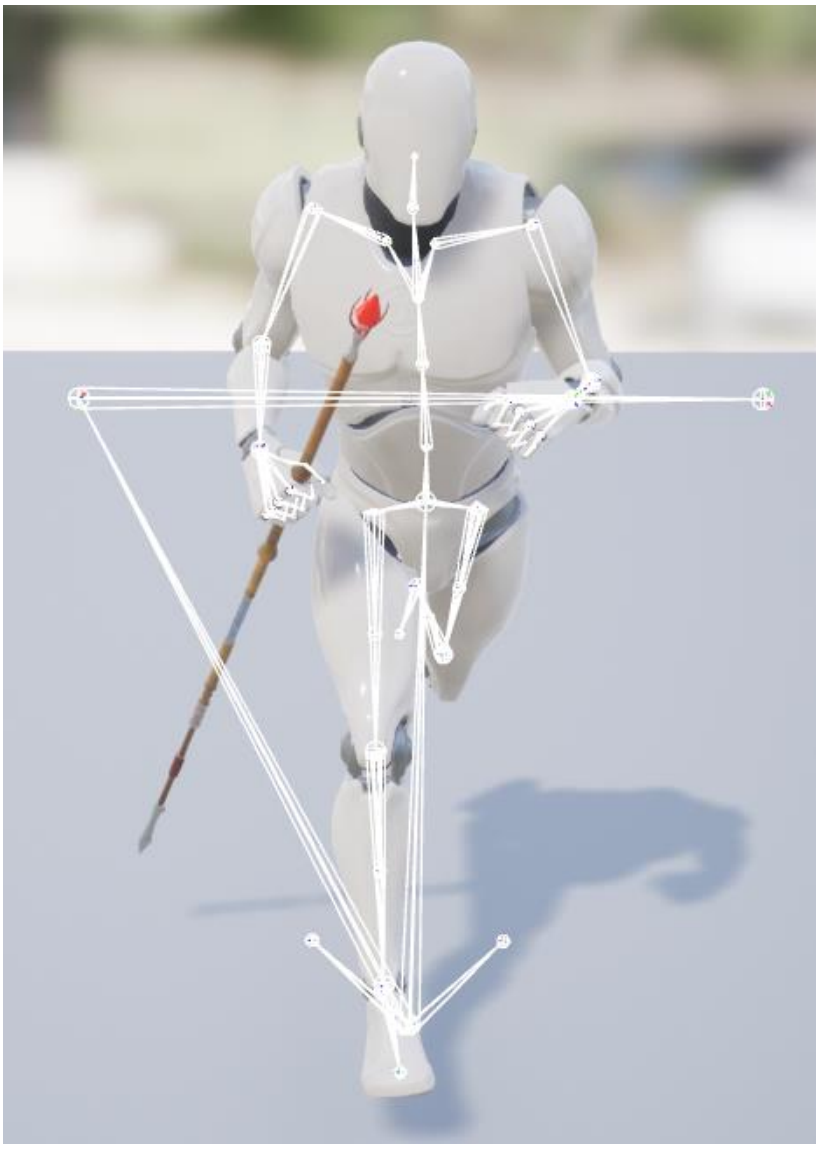
Speed Warping node affects leg stretch length, so that the animations will always match the character`s movement speed. Orientation Warping node makes your character`s body turn in the direction you are turning, allowing seamless directional movement in a realistic way. Head Compensation node makes your character face in the direction your camera is facing, so that the whole movement will be more realistic.

Installation

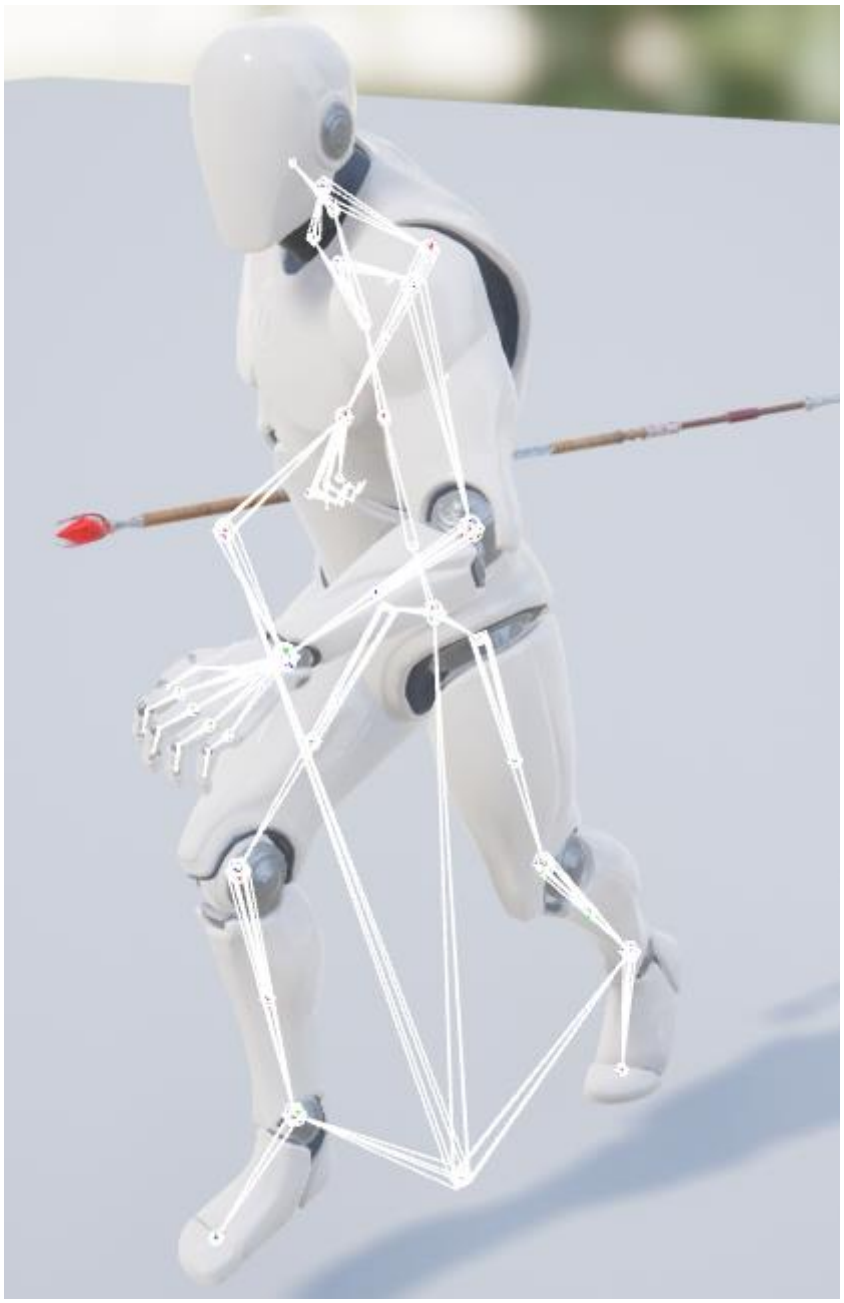
To be able to use this plugin you should have 4 movement animations (forwards, left, right and backwards). For example animation packs from the marketplace or downloadable animations. One important thing to check prior to usage is if your animation makes use of ik_foot_l and ik_foot_r bones:



Here is the default ThirdPerson Run animation. You can see that the animation is not using ik_foot bones:

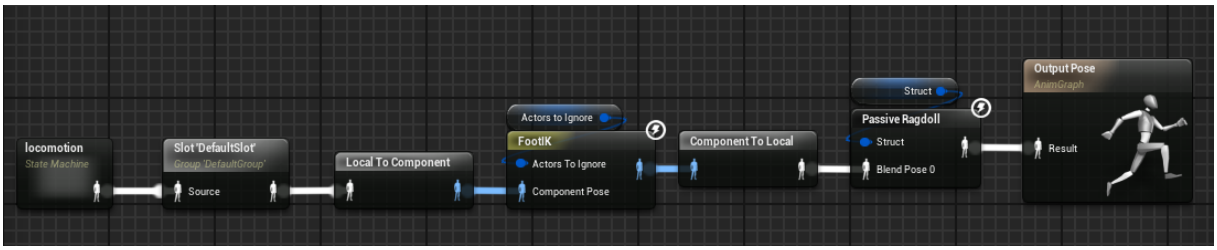


Here is an animation from the marketplace. You can see that ik_foot bones are connected to the foot:

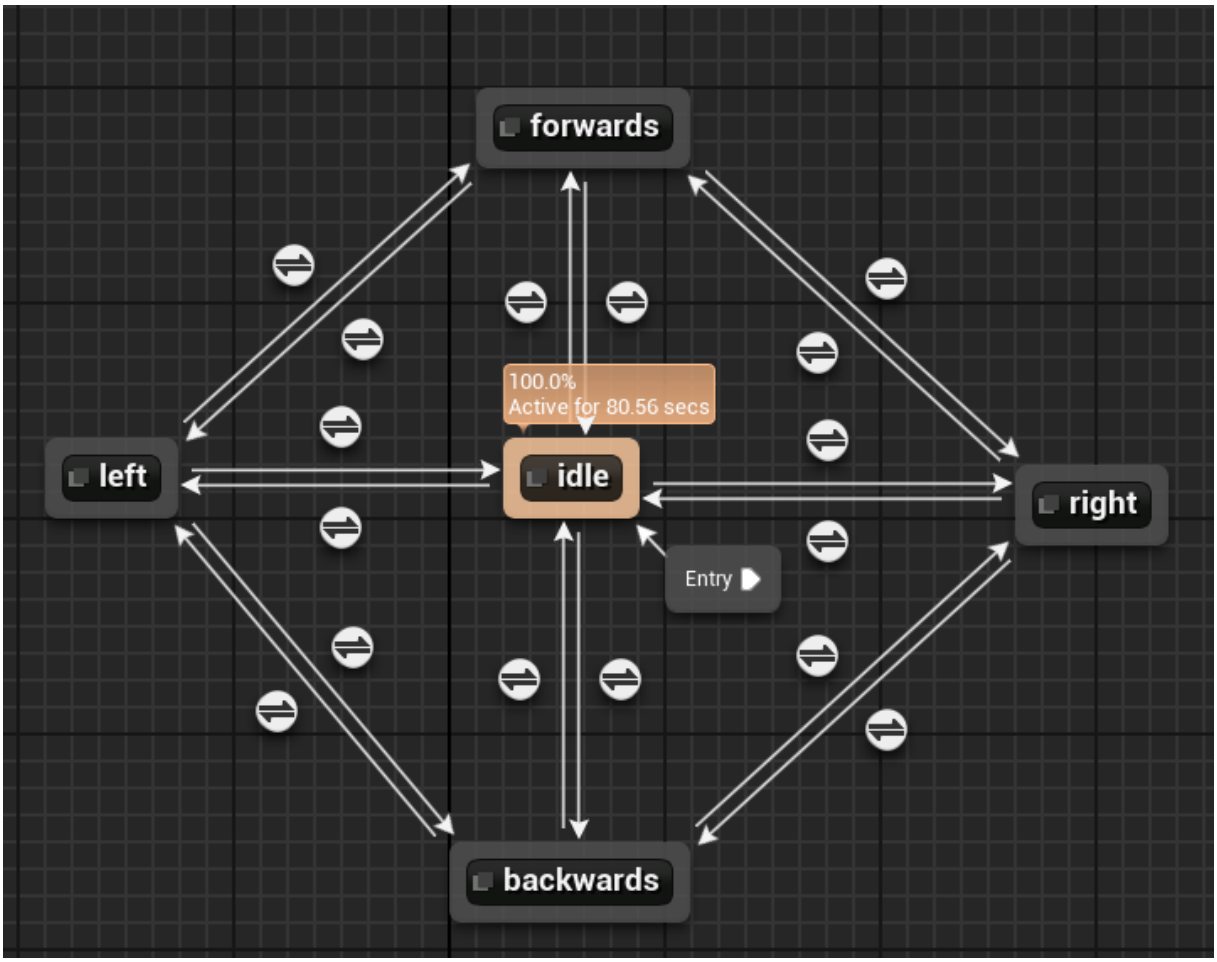


If you have 4 animations and they are using the ik_foot_l and ik_foot_r bones, you are ready to go!

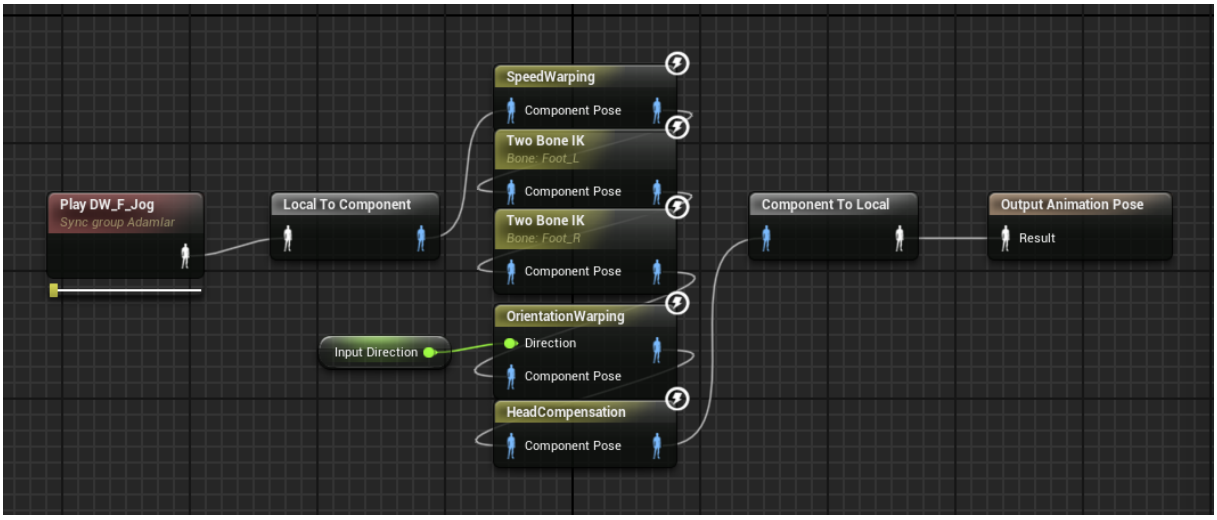
Make a locomotion state machine and put it at the beginning of your AnimGraph:



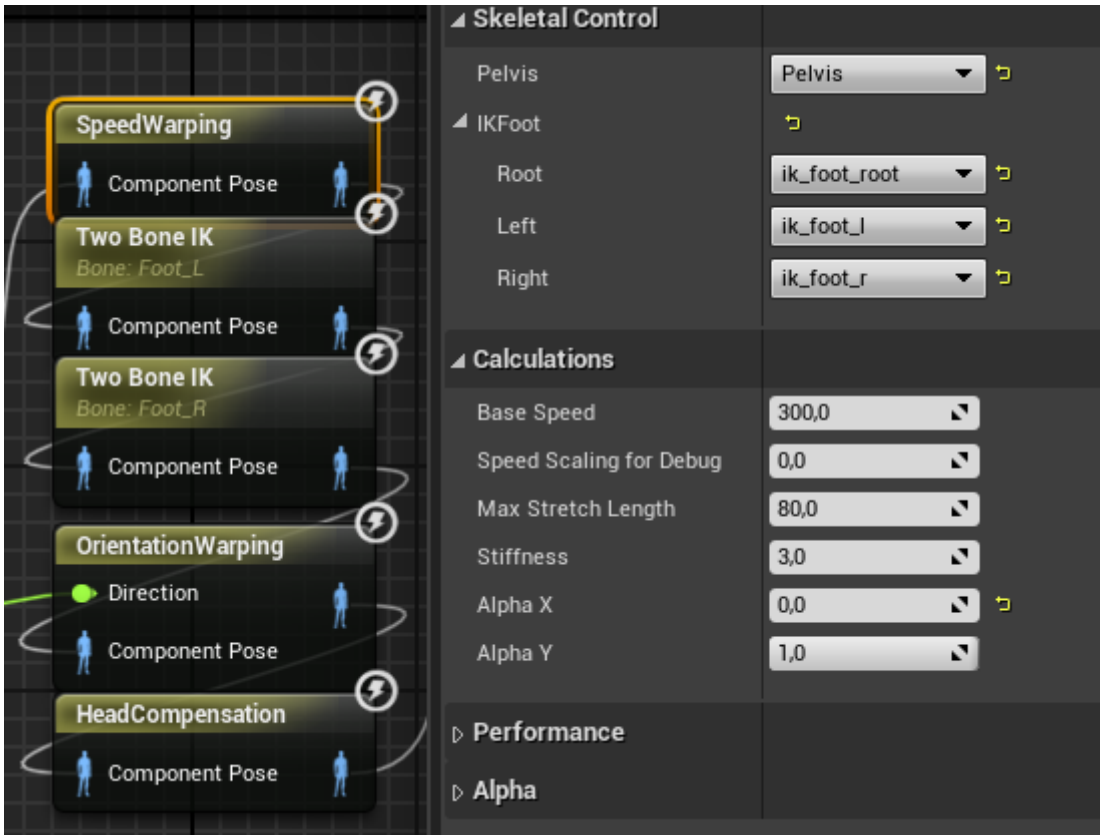
Inside of the state machine looks like this:

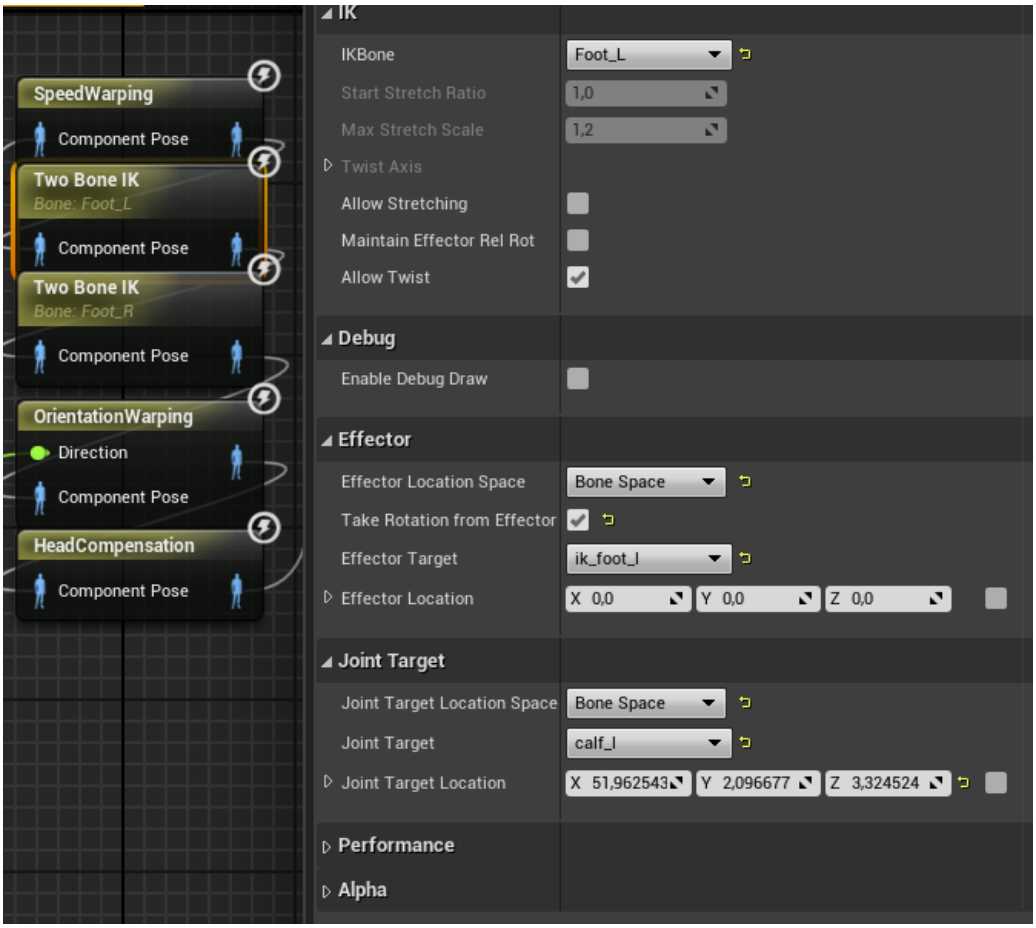


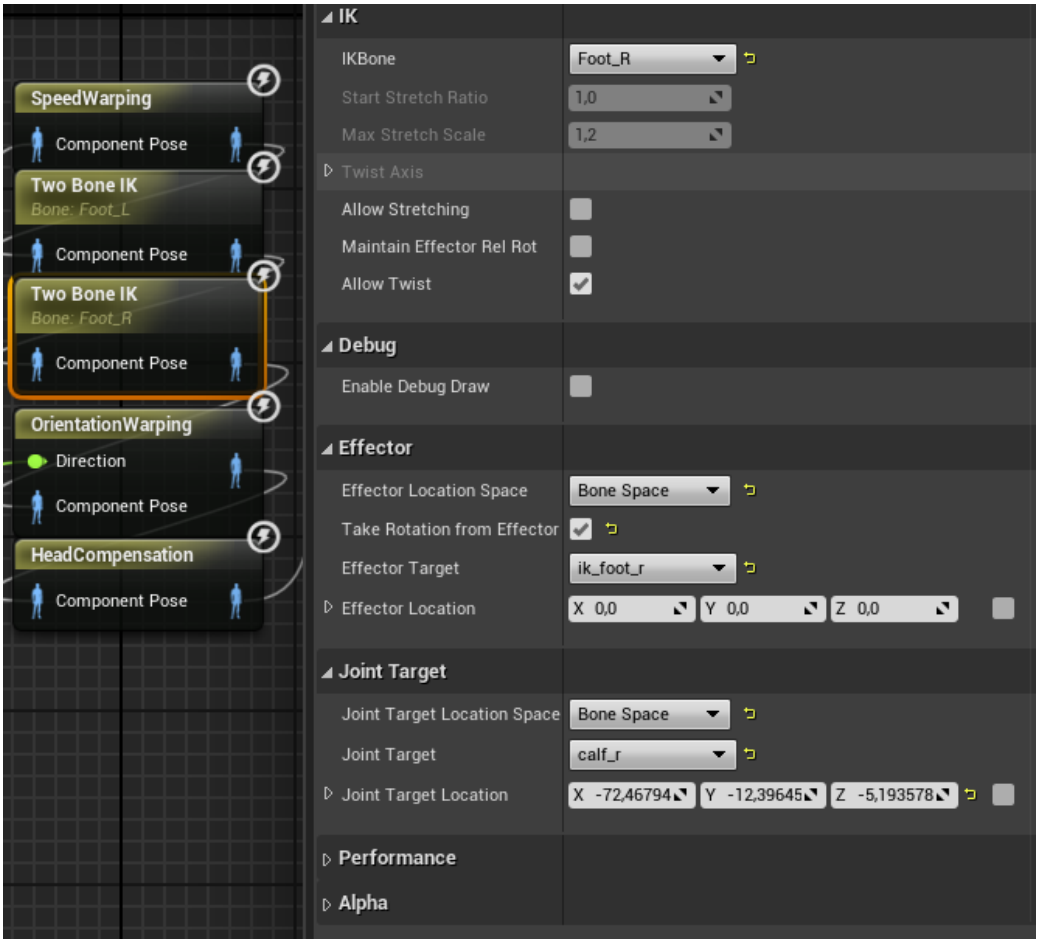
And inside of the states:



You can then alter the parameters:




SpeedWarping
Component Pose
Two Bone IK
Bone: Foot_L
Component Pose
Two Bone IK
Bone: Foot_R
Component Pose
OrientationWarping
Direction
Component Pose
HeadCompensation
Component Pose
IK
IKBone
Foot_L
Start Stretch Ratio
1,0
Max Stretch Scale
1,2
Twist Axis
Allow Stretching
Maintain Effector Rel Rot
Allow Twist
Debug
Enable Debug Draw
Effector
Effector Location Space
Bone Space
Take Rotation from Effector
Effector Target
ik_foot_l
Effector Location
X 0,0
Y 0,0
Z 0,0
Joint Target
Joint Target Location Space
Bone Space
Joint Target
calf_l
Joint Target Location
X 51,962543
Y 2,096677
Z 3,324524
Performance
Alpha


SpeedWarping
Component Pose
Two Bone IK
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Component Pose
Two Bone IK
Bone: Foot_R
Component Pose
OrientationWarping
Direction
Component Pose
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Component Pose
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Foot_R
Start Stretch Ratio
1,0
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1,2
Twist Axis
Allow Stretching
Maintain Effector Rel Rot
Allow Twist
Debug
Enable Debug Draw
Effector
Effector Location Space
Bone Space
Take Rotation from Effector
Effector Target
ik_foot_r
Effector Location
X 0,0
Y 0,0
Z 0,0
Joint Target
Joint Target Location Space
Bone Space
Joint Target
calf_r
Joint Target Location
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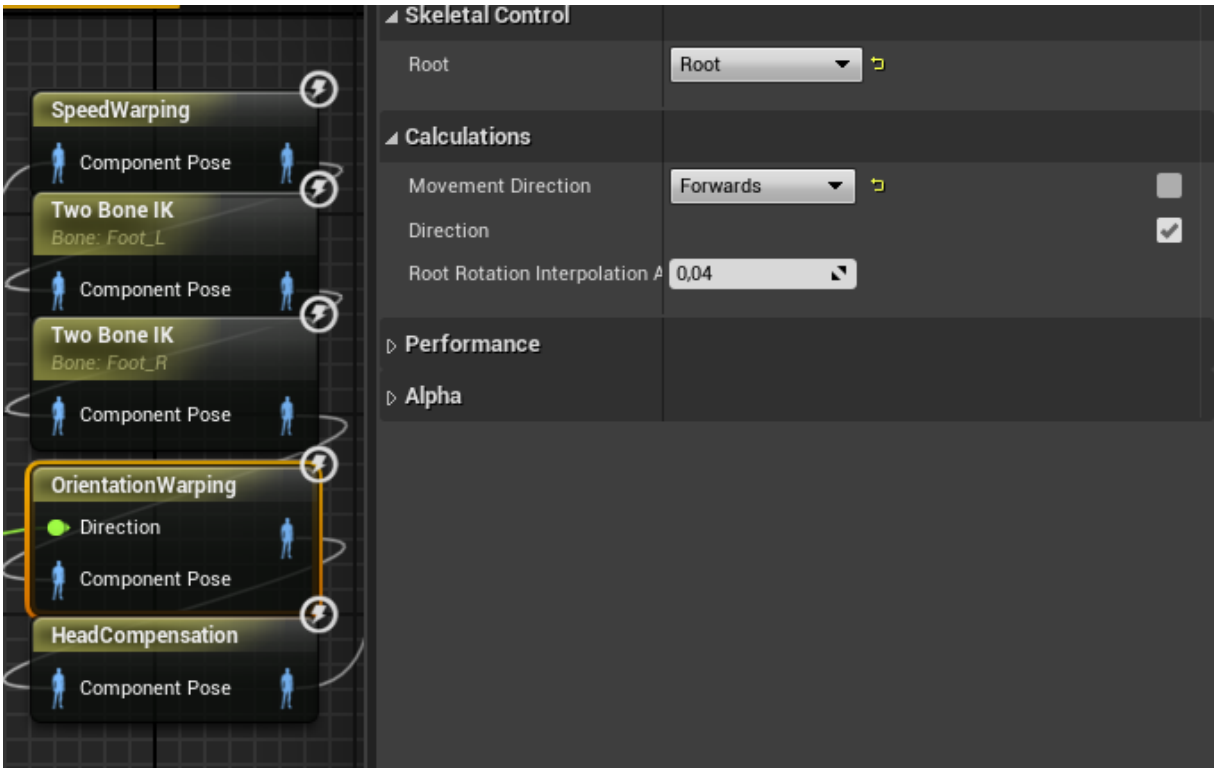
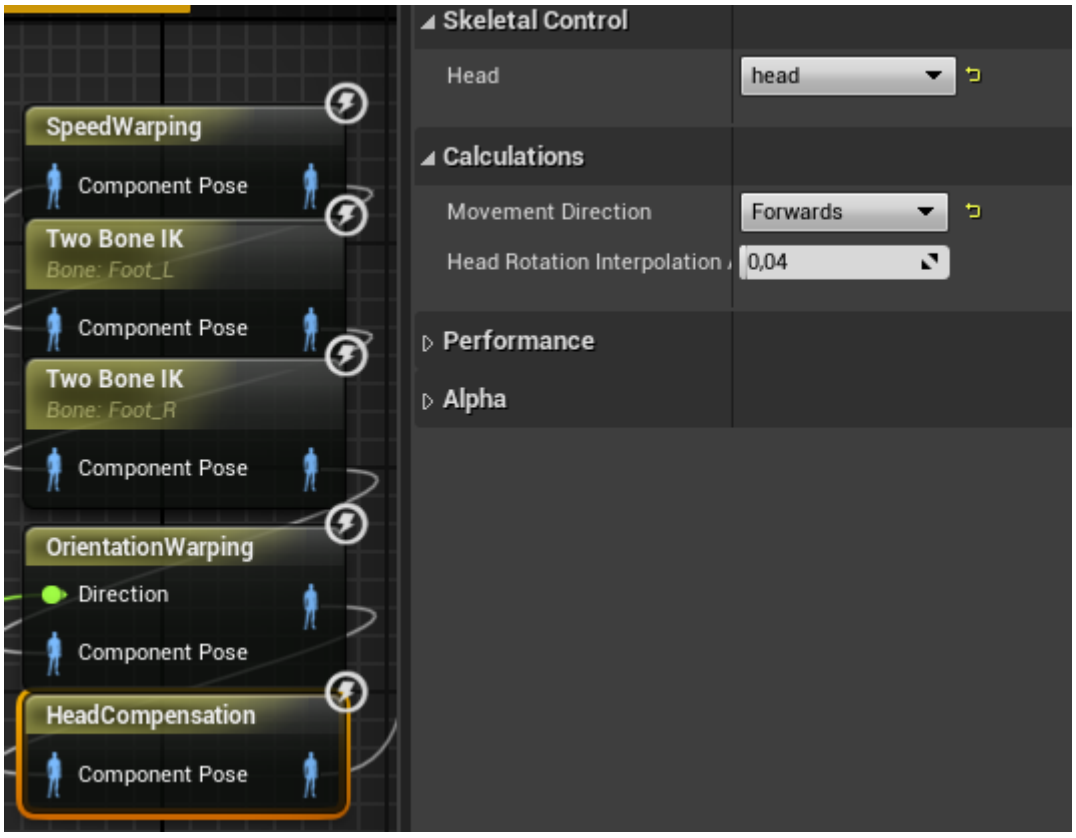
Y -12,39645
Z -5,193578
Performance
Alpha


SpeedWarping
Component Pose
Two Bone IK
Bone: Foot_L
Component Pose
Two Bone IK
Bone: Foot_R
Component Pose
OrientationWarping
Direction
Component Pose
HeadCompensation
Component Pose
Skeletal Control
Root
Root
Calculations
Movement Direction
Forwards
Direction
Root Rotation Interpolation A
0,04
Performance
Alpha


SpeedWarping
Component Pose
Two Bone IK
Bone: Foot_L
Component Pose
Two Bone IK
Bone: Foot_R
Component Pose
OrientationWarping
Direction
Component Pose
HeadCompensation
Component Pose
Skeletal Control
Head
head
Calculations
Movement Direction
Forwards
Head Rotation Interpolation
0,04
Performance
Alpha

- Don`t forget to use Sync Markers to avoid synchronization problems during animation switches. I will give more information about that in the Description page of this product.
- Don`t forget to put “Speed Scaling for Debug” value to 0 during runtime.
- Don`t forget to change “Alpha X” and “Alpha Y” values in accordance with the direction of the animation.
- You can use a Blend Node instead of locomotion state machine to switch directions, if you want to.

Please check my Explanation Video in the Description page of this plugin for a complete explanation in detail and a showcase of this system.

Summary

For further information please also refer to my Explanation Video. If you encounter any unexpected behaviour when using this plugin please let me know through my given communication channels in my marketplace profile.