

## Smooth Joint Manual

Thank you for selecting the Smooth Joint Asset.

This Asset controls hierarchical GameObject and expresses pseudo physical behaviors.

### Asset folder explanation

Scripts : Smooth Joint C# Asset Script

JapaneseComment : Japanese commented script

(It becomes an error if it does not use it after \_j in the script name end are deleted and renamed when the script with the comment is used. )

Sample\_Scripts : Script for sample project

Manual : Manual

fbx : Data for sample project

### Notes with respect to update

Please be sure to back up the project that has been created using the old version.

After you with another project by duplicating the entire project, please use the new Smooth Joint Asset Ver.1.3.0.

Please use by replacing all configuration component of Smooth Joint Asset is.

All in the Scripts folder of the old version Asset it will be replaced.

We review each effect processing again.

Data compatibility with earlier versions is there, but, there is a possibility that the behavior of the effect is changed.

Since some parameters have been changed, there is the case that the set value is in the initial state.

Support for Unity 4 has been terminated.

Operation confirmation, updating, sample project provision etc. will be available only for Unity 5 or higher.

### Update information

Update information of Smooth Joint Asset Ver.1.3.0 20170704.

– Additional features –

Add (G collision On)

With Smooth Joint after group processing setting, it becomes possible to add pseudo collision on the space with the adjacent Smooth Joint.

Although it places a burden on processing, it can be used for collision assistance such as skirts.

– Changed functions –

We reviewed the collision avoidance processing method.

(Avoid Typu) became one, and the setting item was deleted.

(Delay Correction) became effective as standard and became a private parameter.

If you want to disable, set Delay Correction variable in script directly to false

You can set it by rewriting private to public.

(Add Gravity) has been deleted.

When adjusting the deformation ratio by the effect from the original shape

Please use (Add Effect).

You can adjust the total deformation rate by effects other than collision with the original shape.

(Wind) was reviewed.

We made the shaking cycle constant and reflected the random value in the air volume. By swinging in the same cycle as a whole, we improved the impression when receiving wind by multiple Smooth Joints.

The name of (Move Range, Scale Range), has been changed to (Add Move, Add Scale).

Specify the deformation ratio (0 or more)

– Fixed function –

Fixed a bug when specifying 90 degrees or more under conditions with Fix X Y Z (rotation limit).

We stabilized the behavior of Smooth Joint when the state of high processing load is under Unity project.

We also fixed other confirmed defects.

## Change log

Update information of Smooth Joint Asset Ver.1.2.0 20160530.

– Additional features –

It is now possible to interfere with the joint hierarchy in the control in the Smooth Joint.

Start and end can now be in a specified range of IK automatically.

To control the IK that collide with the Smooth Collider Obj.

Smooth Joint Catch component has been added to the new Smooth Joint Asset.

IK, collision, gravity, the effect of pressure variations and sway in the interference, such as can be expressed.

Smooth Collider Obj to interfere with function in its own behavior in the collision has been added.

Adjust the percentage variations due to gravity. (Add Gravity parameters)

– Modified item –

Kind of collision processing has been changed.

Add Rate parameters for setting the rate of the effect has been removed.

If you want to adjust the percentage of the hierarchy, which is a modification to the original shape,

Twist Restore (x, y, z) and please use to set faster Twist Restore Speed.

(However, because it will try to keep the shape of the base you will be limited to the collision and effects representation. Recommended to change by adjusting the addition ratio of each effect.)

Move and scale of the effect is now independent parameters.

We made a correction of the defect.

Fixed a problem that can not be IK control of more than a certain number.

Update information of Smooth Joint Asset Ver.1.1.1 20160105.

– Modified item –

We have changed the method of calculating the centrifugal force and the internal functions of the spring.

More reaction is now well against existing animation and movement.

Making it easier to take effect than the old version.

Centrifugal Force for (centrifugal force effects)

Modified to directed straight to the vector outward from Centroid.

Centrifugal force is now susceptible.

For Spring (wavering effect)

We have been revised (Joint Obj) the spring function again as a reference to the change of the number 0 in the world coordinate.

Advantage, it was easier to swing in response to movement.

Drawback, pendulum motion is now difficult to express.

Update information of Smooth Joint Asset Ver.1.1.0 20151217.

– Additional features –

Inertia effect has been added.

In previous versions, the behavior of the period from the start point to the end point was the basic.

When you use the inertia effect, to move past the end point from the starting point.

It comes to the behavior back to the end point at a reduced speed.

Than previous versions, the better reaction is to operate.

Group effect has been added.

will be able to cooperate in the hierarchy to each other are controlled by Smooth Joint.

When the group specified, it will move in conjunction with the movement of each other.

Surface using a plurality of Smooth Joint, it can be more natural representation.

Friction has been added to the hierarchy in the collision.

If the hierarchy there is a site that conflict, I can specify the effect decline for that part.

It does not stop completely because the hierarchy to each other are attracted, but eventually

You can specify up to effect force 0.

It added the movement of the effect changes in the processing load.

By adding the amount of movement when the update frequency of Unity by the processing load fell, to move the effect.

Smooth Joint Editor is now convenient.

The majority of the items that are set in the Smooth Joint can now be set using the Smooth Joint Editor.

– Modified item –

It was the optimization of behavior for all of the effects.

There is a possibility that the behavior image is changed in your project using the old version.

A process related to initialization it was changed.

Because of loading speed improvement and memory usage improvements.

If you do not enter the required values in effect before you play in the Unity editor, it will Null is not initialized.

Effects that do not enter a value for use before play even if the parameters change during play will not be executed.

Switching of the start and stop I done with the use switch of effects that are to value input.

It gave the bug fixes.

Fixed a bug that can not be registered if you copy a collision object.

Others, we gave a bug fix and test.

## **Support**

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