
【PunchAura Asset Documentation】

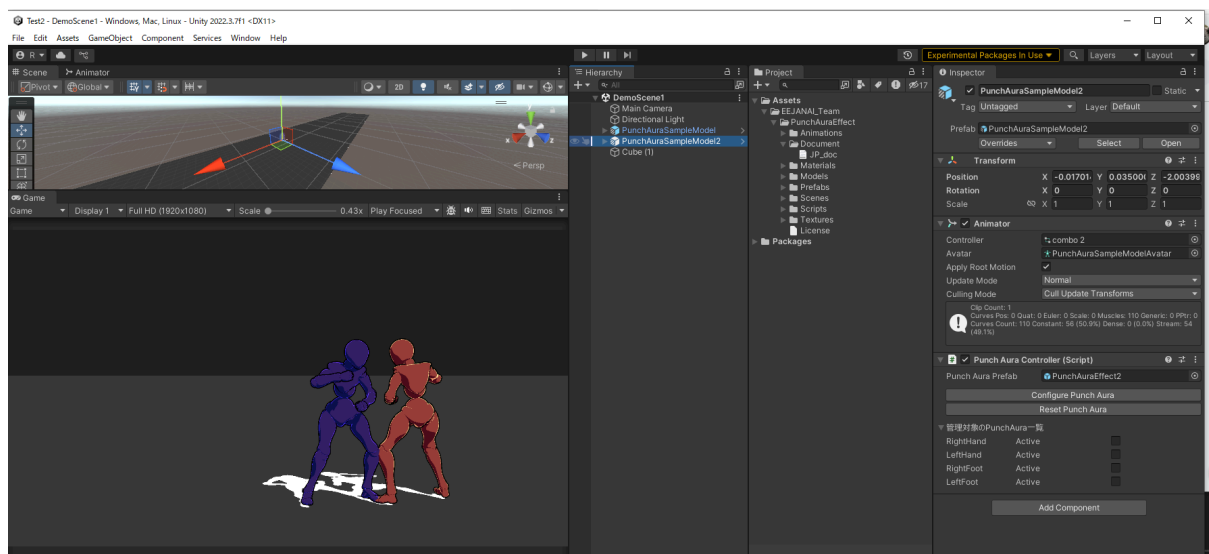
【Overview】

This asset is a collection of components designed to display a ring-shaped effect (Aura) during character punches and kicks.

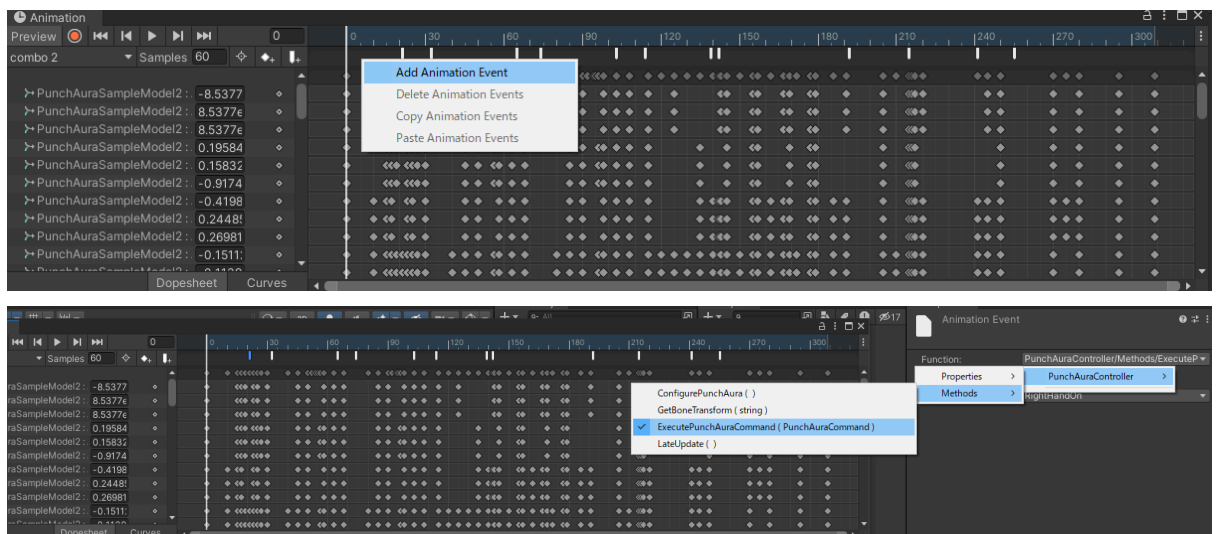
It consists of multiple scripts such as “PunchAura”, “PunchAuraController”, and “MeshBuffer” that manage effect visibility, fade-out processing, and performance optimization via object pooling.

【Usage Instructions】

- Ensure that the character has an Animator component attached.
- Add the “PunchAuraController” component to the root object of the character.
- In the Inspector, assign the PunchAura prefab for the effect to the “PunchAuraPrefab” field.
- The PunchAuraController will automatically generate PunchAura effects on the target bones (RightHand, LeftHand, RightFoot, LeftFoot) and manage them.
- Call “ExecutePunchAuraCommand()” from an animation event to control the effect’s ON/OFF state.
- Detailed parameters for each effect (such as duration, radius, color, and fade-out time) can be adjusted on each PunchAura component.



Right-click in the Animation window to add a signal -> select the desired action from ExecutePunchAuraCommand.



【Component Details】

<MeshBuffer>

(MeshBuffer is a class that internally manages dynamic mesh vertices, indices, UVs, and color information.)

Item	Type	Description	Initial
Value/Notes			
Vertices	Vector3[]	Array storing mesh vertex information	Initial size: 4
Indices	int[]	Array storing mesh index information	Initial size: 6
UVs	Vector2[]	Array storing mesh UV coordinate information	Initial size: 4
Colors	Color[]	Array storing mesh vertex color information	Initial size: 4
IndiceChanged	bool	Flag indicating index updates	Initial value: true
ColorChanged	bool	Flag indicating color updates	Initial value: true
UVChanged	bool	Flag indicating UV updates	Initial value: true
VertChanged	bool	Flag indicating vertex updates	Initial value: true
UV2Changed	bool	Flag indicating UV2 updates	Initial value: true
BlockSize	int	Block size for additional vertices when expanding the buffer	108
BoundsScheduleTime	float	Time interval (in seconds) for recalculating the bounding box	1.0
ElapsedTime	float	Elapsed time used for bounding box recalculation	0.0

<PunchAura>

(PunchAura is a class that displays a ring-shaped effect around a specified bone.)

Item	Type	Description	Initial
Value/Notes			

Bone	Transform	The bone on which the effect is displayed. Automatically set by PunchAuraController	–
AuraMaterial	Material	The material used for rendering the effect	–
MaxSlice	int	Number of effect slices (affects the duration of the ring effect)	14
EffectDuration	float	Duration of the effect (in seconds)	0.3
RingSegment	int	Number of divisions for the ring effect (number of vertices)	12
AuraRadius	float	Radius of the effect	0.3
AuraColor	Color	Base color of the effect (alpha will change during fade-out)	white
FadeOutTime	float	Time taken for fade-out (in seconds)	1.0
ResetDistanceThreshold	float	If the difference from the previous frame exceeds this value, the slice is reset	0.5

<PunchAuraController>

(PunchAuraController automatically assigns and manages PunchAura components on the character's limbs (RightHand, LeftHand, RightFoot, LeftFoot).)

Item	Type	Description	Initial
PunchAuraPrefab	GameObject	The PunchAura prefab used for generating the effect (Must be assigned)	
testCommand	PunchAuraCommand	Test Animation Event	
command	RightHandOn	(default)	

<PunchAuraCommand (Enum)>

(This enumeration is used to issue ON/OFF commands for the effect from animation events, etc.)

Item	Value	Description
RightHandOff	0	Turns the right-hand effect OFF
RightHandOn	1	Turns the right-hand effect ON
LeftHandOff	2	Turns the left-hand effect OFF
LeftHandOn	3	Turns the left-hand effect ON
RightFootOff	4	Turns the right-foot effect OFF
RightFootOn	5	Turns the right-foot effect ON
LeftFootOff	6	Turns the left-foot effect OFF
LeftFootOn	7	Turns the left-foot effect ON

<PunchAuraControllerEditor>

(PunchAuraControllerEditor is a custom Inspector used to set up or reset PunchAura components within the Editor.)

Item	Type	Description	Notes
Configure Punch Aura bones	Button	Configures and assigns PunchAura on the target bones	Execute from the Inspector
Reset Punch Aura	Button	Deletes the current PunchAura components and regenerates them	Execute from the Inspector

【Notes】

- Please ensure that all components are correctly set up and assigned in the Inspector.
 - The PunchAuraController requires an Animator component.
 - If the PunchAuraPrefab or other prefabs are not correctly assigned, errors may occur.
 - Use the “Configure Punch Aura” and “Reset Punch Aura” buttons in the Editor to ensure that the PunchAura components in the scene are managed correctly.
 - The MeshBuffer and its internal classes (AuraSlice, AuraSlicePool) handle dynamic mesh generation and performance optimization for the effect; typical users do not need to manipulate these directly.
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This concludes the usage instructions and detailed parameter explanations for the PunchAura asset.