Fire Skeleton Shader, scripts and optimization

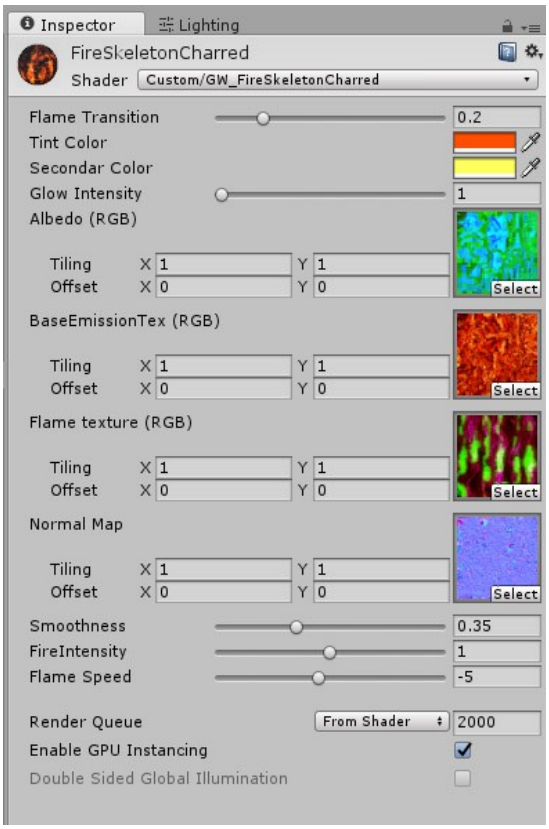
Thanks for purchasing the Fire Skeleton Asset, this asset provides a set of prefabs that will cover most common uses for this creature, from high quality AAA cinematic to high performance on rendering a hundred of units at stable framerate.

Materials

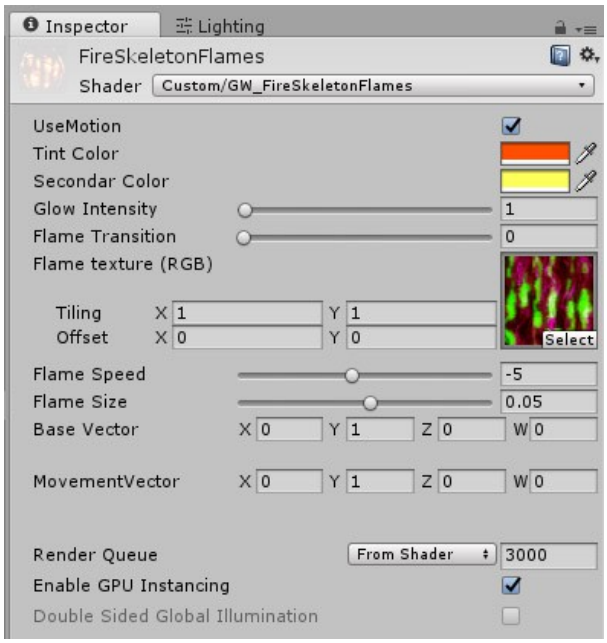
Fire Skeleton includes 2 main materials, FireSkeletonCharred and FireSkeletonFlames, those are responsible for the skeleton body and flames.

FireSkeletonCharred is responsible for the Fire Skeleton body rendering, it behaves as an Unity Standard Shader, most of the aditional calculations are related to the emission value that emulates the surface being on fire.

FireSkeletonFlames is responsible for rendering the Flames, it´s provided in two variations, FireSkeletonFlames and FireSkeletonFlamesAlpha, the first uses Additive blending while the second uses Alpha Blending. In case you have a very bright scene and is not planning on using Color Grading post-processing, FireSkeletonFlamesAlpha will provide better results.




```
Flame Transition : force a transition between normal
flame based on texture sample and full flames
Tint Color : Main flame color
Secondar Color : Secondary flame color
Glow Intensity : Useful to fine tune while using
bloom screen effects
Albedo : Charred Albedo Texture
BaseEmissionTex : base emissive texture
Flame texture : sample texture used for fire
distortions and syncing body fire and flames
Normal Map : Charred Normal map
FireIntensity : Controls the amount of distortion
burning areas receive
Flame Speed : flame disturbance frequency
```

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UseMotion : Use data sent script
GW_FireSkeletonManager.cs to simulate fire
movement.
Tint Color" : Main flame color
Secondar Color : Secondary flame color
Glow Intensity : Useful to fine tune while using
bloom screen effects
Flame Transition : force a transition between
normal flame based on texture sample and full
flames
Flame texture : sample texture used for fire
distortions and syncing body fire and flames
Flame Speed : flame disturbance frequency
Flame Size : controls the amount of vertex
distortion on flames, attenuated by vertex color
Base Vector : neutral flame direction, can be
used to simulate wind
MovementVector : motion calculated on
GW_FireSkeletonManager.cs provides a natural
movement to flames based on GO average velocity
```

Important: Please keep in mind that Flame Speed is a property available on both body and flame materials and if you plan on having them visually connected, this value needs to be the same on both.

GW_FireSkeletonManager Script

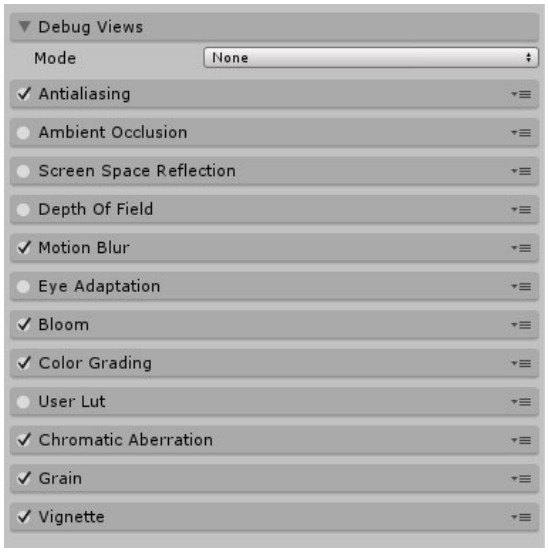
GW_FireSkeletonManager.cs is responsible for providing motion data to the flames shader, this can be used to make flames react to the movement of the skeleton.

The script itself is very simple and cycles through all visible (not culled by camera frustrum or LOD) Flame MeshRenderers and send the motion data using Material Property Blocks, this makes it possible to batch the Flames together even though they have unique property values on the motion vector.

Sample Frequency : How often the position should be sampled
Number of Samples : How many samples will be kept for calculating motion
Movement Intensity : The intensity of the motion on the flames, it´s worth adjusting this value depending on the range of animations being used.
Max Movement: Maximum velocity that will be sent to the shader, the magnitude of the motion vector is normalized and multiplied by this amount in case it´s a higher value.
Neutral Direction: Neutral direction of the flames, usually up, but can include random values or emulate wind.
Flame Mesh renderer List : A list of all Mesh Rendererds of flames, this includes all LODs. The calculation only happens on the visible parts.

Helper script is only needed in case flame meshes had been manually removed or included on a Skeleton, make sure the sample material is the same one the flames are using and click on “Run”, the script will fill GW_FireSkeletonManager with a new list of all Flames available. This helper script runs on Editor Mode.

Post-Processing

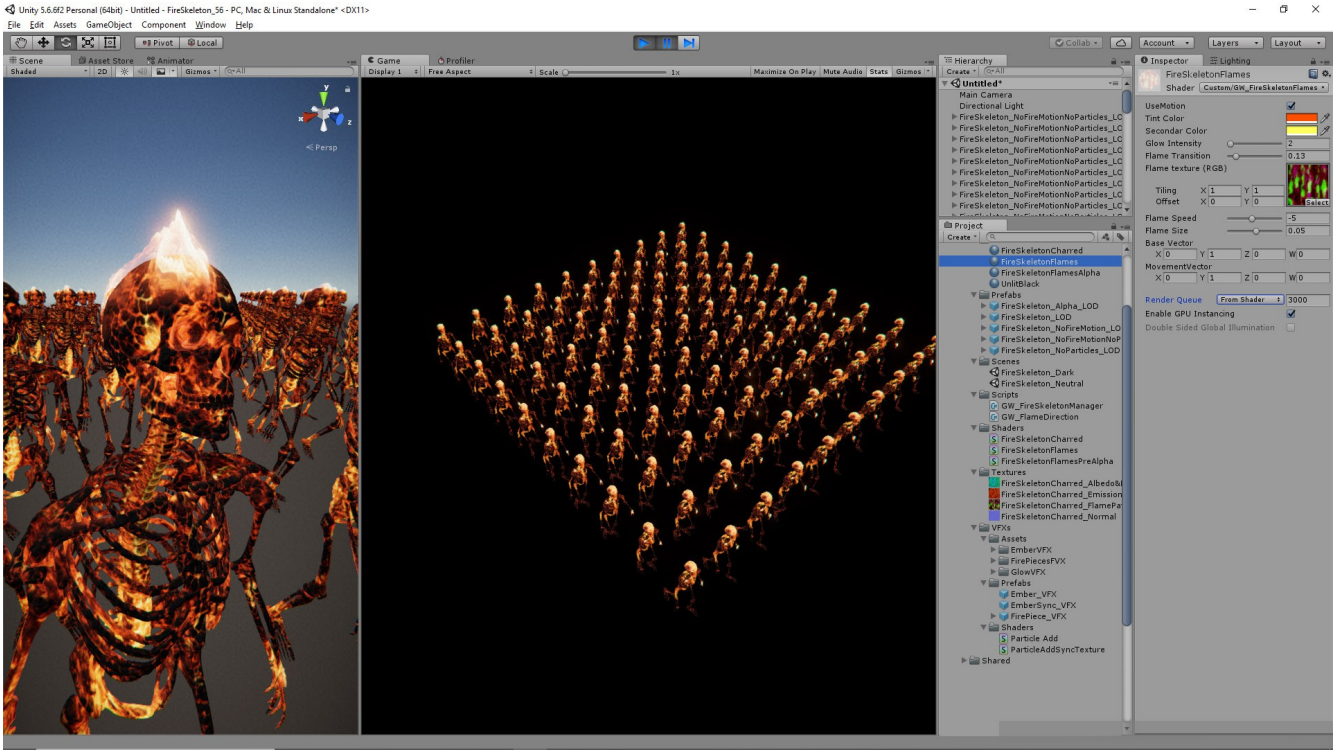


It´s highly recommended using Post Processing to improve visual resuls of the rendering in general, but this is especially true for the Skeleton Flames effect. Antialiasing, Motion Blur, Bloom and Color Grading plays a big role on generating high quality results.

Optimization

Fire Skeleton has been stress tested with a hundred visible units and managed to archieve very high stable framerates, we provide a set of prefabs that cover most common usages for this asset. Depending on the target device and viewing distance to the models, “NoFireMotion” version prefabs will provide a significant boost since a lot of calculation happens to feed the flame shaders with the motion data and this contribution is only visible at close distance.

It´s higly recommended using GPU Instancing provided on our materials since it will help batching flames together.



Contact us

Feel free to contact us : unitygoblinworkshop@gmail.com , our goblin crew is looking forward helping you out.