



Curved Lines System

Unity Asset – How to use doc



Curved Lines System

Curved Lines System allows you to generate curved lines from a user-defined list of points. From just a few control points, a completely smooth curve will be generated, and then rendered using a 2D renderer or 3D mesh.

The Scripts

CurvedLine2D.cs

Uses Unity's Line Renderer to draw the line once the curve has been generated by the system. Use it for any 2D line.

CurvedLine3D.cs

Generates a cylinder-shaped 3D mesh in real-time. Good for ropes or other continuous 3D shapes.

CurvedChain3D.cs

Repeats any mesh multiple times to create a chain. For example you could have a 'ring' mesh that would be repeated in real-time following the curve of the line. **Warning:** try to avoid meshes with a lot of triangles if you want good performance.

Parameters

Path

The list of control points that will be used to generate the line. A line must have at least 2 points, and 3 points if you want it to curve. You can create Empty GameObjects as your control points.

Curve Precision

The higher this value, the more intermediary points will be generated and the more smooth the curve will be. Higher values require more performance. A value of 0 will show the original unmodified path.

Curve Shape

Will change the shape of the curve, it is often best to keep this value in the middle (0.25) for the smoothest curve. But you can edit this value to try different shapes.

Curve Skip Extremities

The two extremities of a line will usually have no curve in them because there are no more control points to determine which side to curve. If you check this box, the 2 extremities control points won't be rendered, so that the whole line curve. Turn it off if you want the line to end exactly at your control points. Turn it on if having smooth curve at extremities matter more than the exactitude of the length of the line.



Curve Debug

Shows the generated line. The blue line is your original line going from one control point to the other. The white line is the one generated by this system.

Auto Refresh Editor

The line will be updated in real-time in the editor view. Turn this off to avoid the performance overhead. When off, you can use the "Refresh Now" button to refresh it manually.

Auto Refresh Playmode

The line will be updated in real-time in play mode. Turn this off if the line never change to avoid performance overhead. When off, you can call the Refresh() or RefreshAll() functions to refresh by script.

Refresh Rate

How often, in seconds, the line will be refreshed (both play-mode and editor). A value of 0 means it will be refreshed every frame. A value of 0.1 means it will be refreshed every 100ms. Useful to optimize performance when auto-refresh is turned on.

Frustum Cull Playmode

If on, while in play mode, will perform a test to check if the line is viewed by the camera, the line will only be refreshed if seen by the camera. Has no effect if auto refresh playmode is off.

Frustum Cull Radius

Radius around each point when performing the frustum cull test. High radius means that the line will refresh more often. Use larger radius if the size of your line is big or if the line is animated.

Renderer (CurvedLine2D only)

Material

Choose which material will be used to render the line. This value is duplicated in the LineRenderer properties.

Width

Size of the line. This value is duplicated in the LineRenderer properties.

Mesh (CurvedLine3D only)

Axis Ref

Which axis is used as reference to render the line. You can try different options to see which gives the best results. Generic rule: Use Y for side-view games, use X or Z for top-down game.

Material

The mesh's material. You may want to adjust the material's tiling and offset to make it fit the line.



Mesh Precision

The higher this value, the more triangles will be used to create the mesh. Lower values have better performance. A value of 4 means the line will have 4 sides (box-like), the higher the value to closer to a circle it will be.

Radius

Size of the line.

Max Length

The maximum length of the line. If your control-points are moving during the game, and you don't want the line to resize, you can set a maximum length. A value of 0 means no maximum.

Debug Mesh

Shows the normals of the generated mesh.

Repeated Mesh / Chain (CurvedChain3D only)

Model Mesh

The 3D model that will be repeated to create the chain. **Warning:** try to avoid meshes with a lot of triangles if you want good performance.

Material

The mesh's material.

Mesh Offset

Offsets each individual mesh. Useful if your original mesh isn't centered in the file.

Mesh Rotation

Rotates each individual mesh. Useful if your original mesh isn't rotated correctly in the file.

Mesh Scale

Resizes each individual mesh. This will determine the size of the chain.

Chain Type

Align or alternate. If "align" all the meshes will have the same orientation. If "alternate", each mesh will be rotated 90 degree compared to the previous one to create a chain-like effect.

Axis Ref

Which axis is used as reference to render the chain. You can try different options to see which gives the best results. Generic rule: Use Y for side-view games, use X or Z for top-down game.

Spacing

The space between each mesh in the chain.



Max meshes

The maximum number of meshes, useful if you don't want your chain to resize when the control points move. A value of 0 means no maximum.

Debug chain

Shows the chain's mesh positioning.

Improving the System

If you notice a bug or you think that a feature is missing, let me know about it. I will be happy to improve this system and make it great! And since I can't predict all the use cases, your feedback would really help me know what I should include in the future versions.

Keep in mind that the goal is to keep the package lightweight for easy modification. I'm totally up for adding new features as long as it keeps the amount of code low. It's important to me that this system is easy to use and edit.

If you have any questions or suggestions send me an email:

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Thank you!

Credits

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