

System test case - #6

Test case details

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Device: Desktop computer, high-end, Windows 11 Home V.24H2 x64

Environment:

- Main branch of project repository
- Most recent commit is
32ee1604cc3eb9304710ea84aadcdadaad360a4c8
- Unity editor version 6000.0.35f1
- Generated runnable .exe via File > Build and run

Test details

The test case focuses on testing how each parameter in PointCloudVisualizer and PointCloudManager scripts affects the generated game world. All testing was done in Unity editor where parameters were changed one at a time and effects were viewed in editor.

Tester tested the parameters which represent variables, not editor-things like materials or connected objects.

Test steps and results

In the testing process one parameter at a time was changed and all others were on the default level. Viewing the game on default settings is used as a reference. All the planned test cases are listed in the table below.

Parameter name	Parameter default value	Parameter value	Expected behaviour	Actual behaviour	Observations.
Max points	2000000	10	Only ten points are visualized at any time, old ones replaced by new	As expected	Hard to ascertain visually, but can be done when very close to an object that fills the camera
Particle size	0.02	0.1	Visualized points are notably larger	As expected	
Brightness	2.75	5	Visualized points are notably brighter	As expected	
Num Rays	100	1000	Many more points are being scanned when scanning upon player action	As expected	
Max distance	10	2	Points are scanned only very close to player	As expected	
Camera rotation threshold	0.9	3.6	Camera must be rotated much more to scan points	Game continually scans points even without action	I probably misunderstood the variable
Camera rotation threshold	0.9	0.2	Camera must be rotated much more to scan points	As expected	Indeed. Rotation is checked via vector dot product, meaning a smaller value represents a larger angle
Camera translation threshold	0.1	0.5	Player must move more to scan points	No visible difference	Maybe the threshold is still low?
Camera translation threshold	0.1	5	Player must move more to scan points	As expected	
Max points	2000000	2147483648	Points still scanned and shown in regular manner	As expected	Script limits the maximum value as 100000000
Particle size	0.02	1	Particles are shown despite their large size	As expected	Script limits max value as 1
Particle size	0.02	0.001	Particles are shown despite their small size	As expected	Script limits min value as 0.001

Num rays	100	10000	Points are scanned, perhaps slows program down?	As expected. Significant stuttering and fps slowdown	
Num rays	100	100000	No idea, I predict problems	Simulation freezes for periods of ~500ms when doing scanning	Despite severe stuttering and very low fps when scanning or moving the player or camera fast, shockingly still works.

Conclusions

The parameters of point cloud manager and visualizer are working as expected and not breaking the simulation. There should be no problem related to these parameters and their respective variables in regular use of the simulation.