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4.3

MeshBuilder

Code explanation

Unity Version Used: 2018.3.6f1

Visual Studio: 2017

C# Unity Side

- Mesh Builder

  Draws the Mesh Builder window tool along with every button and selector available, also handles the edit mode and user interaction.

- Mesh Handler

  Allows user to edit Mesh (move, color, export etc.) and stores cloned Mesh data.

- Mesh Editor

  Custom editor for Mesh Handler component that allows Unity to present a layer above the mesh that displays vertices and faces which allow the user to interact with them.

- Library Loader

  Loads the C++ DLL methods that handle Vector operations such as Vector Cross Product and Vector Normalization, and Mesh operations such as creating a triangle on a Mesh or getting the same vertices as the selected vertex (Meshes sometimes have multiples vertices on the same position due to normals, so we mostly have to look for the vertices on the same position and edit them all at the same time).

C++ DLL Side

- Vector

  Simple Vector struct container that handles Vector3f operations.

- IntArray

  Simple Integer struct container that stores a pointer and its size.

- Cross

  Handles cross product between two vectors and the right-hand vector. Used to calculate face normal (for extrusion purposes).

- Normalize

Normalizes a vector, that’s it.

- GetMiddlePoint

Calculates the middle average point of the given vectors.

- Create Triangle

Creates a triangle into the triangles given array.

- GetSameVertices

Returns an array with vertices with the same position as the given one. Used in order to move, color or edit vertices.

Características implementadas:

- Documentación → User Guide y Code Explanation además de comentarios de código.
- Modelo de datos → Modificación y edición de mallas
- Backend → Manejo de vertices, triangulos y mallas a baja escala (y otros atributos de mallas).
- Interfaz → Unity (ver user guide)
- Maquetación de la interfaz → Dividida en diferentes secciones con error catching.
- Uso de parámetros → El usuario elije entre una diversidad de posibles acciones para editar la malla.
- Serializacion/Deserialización → Se puede guardar la malla final en una carpeta como archivo, también se puede leer una malla para editar o crear una primitiva
- Uso de scripting → C#
- Uso de librerias → C++ DLL