How to made: BLue rose

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1 Introduction

Animation is the simulation of a movement, created by displaying a series of images or frames. Over the years, image animation has evolved considerably. A few years ago each painting had to be drawn and joined to form an animated image. Now the use of the computer allows to create much more realistic scenes.

Computer animation is the technique of creating moving images using a computer. To create the illusion of movement, an image is displayed on the screen and is quickly replaced by a new one in a different frame.

For the creation of computer images there are multiple dedicated softwares, specialized in 2D and 3D. In this case the small animation of the Blue Rose was created in Blender.

2 Blender

Blender is a free and open-source 3D computer graphics software toolset used for creating animated films, visual effects, art, 3D printed models, motion graphics, interactive 3D applications, virtual reality and computer games. Blender's features include 3D modeling, UV unwrapping, texturing, raster graphics editing, rigging and skinning, fluid and smoke simulation, particle simulation, soft body simulation, sculpting, animating, match moving, rendering, motion graphics, video editing, and compositing.

3 Keyframes

El key framing se refiere a establecer posiciones Key framing refers to establishing positions at specific points of time in an animation and the middle part is obtained by the computer through mathematical interpolation. It is necessary to make a key frame for each control at each level of the model hierarchy. In

this case, this version only contains primitive mesh such as cubes, spheres and planes with some modifications.

4 Models

Characters in primitive mesh animation with a human scale which are moved by changing position between key frames.

The house was created from a cube which was scaled, and in edit mode it was edited. Using loop cut, vertically and horizontally, to trim the windows and door.

The extrude tool was used to give it volume, the edges were moved to create the ceiling. The floor and ceiling were removed to avoid being affected by the same material. Like a wall to position the camera.

For the trees, specific curves were created that blender offers through the Add On Sapple Tree Gen, which provides you with pre-made trees with animations, shapes, types of leaves, number of leaves per branches and armatures to create the animation.

While the environment floor is a plane with a procedural textured material.

5 Materials and textures

Materials are those elements that help us to give objects realism by giving them attributes such as roughness, color, reflection similar to metal.

The materials are produced in the Shading section of blender which is managed by nodes that allows us to create complex and basic metrials.

In these nodes we can create textures in two different ways, one of them is loading an image which will embroil the model. The repetitions, orientations or sections where they will be in the model can be modified in UV wrapping which is a 2D deconstruction of the 3D models.

In the animation we can see these textures on the walls of the house, floors, door and colors of the trees.

In the case of procedural textures, they are those created by nodes that by means of Blender algorithms simulate certain characteristics of reality such as strings, noise, volume and even common materials such as bricks, which were

used in the fireplace.

6   Mantaflow

mantaflow is an open-source framework targeted at fluid simulation research in Computer Graphics and Machine Learning. Its parallelized C++ solver core, python scene definition interface and plugin system allow for quickly prototyping and testing new algorithms. A wide range of Navier-Stokes solver variants are included. It's very versatile, and allows coupling and import/export with deep learning frameworks (e.g., tensorflow via numpy) or standalone compilation as matlab plugin. Mantaflow also serves as the simulation engine in Blender.

Manta flow was added in blender in version 2.8 so it was used to create the fire effect in the fireplace using two Mesh. A cube which was defined as a domain, gas type, which adapts to its volume and the engine that will make the simulation data. In this case I use modular only in 100 frames due to storage in the repository. The sphere is a fluid type simulation, like a fluid of fire that is always in motion.