

MeshSafe

Introduction

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Background

You are a 3D artist. You sell your design in a standard 3D format, such as OBJ and STL. Some of your customers resell/release your design without permission. That hurts your business and you are desperate to find out who the bad guy is. There are online tools to add watermark to an STL file; however, it can be removed easily.

What can you do?

MeshSafe

MeshSafe offers a solution. Let's be clear with a few things first.

1. It is not a bank security system. It can be broken, just not that easy.
2. You need some basic mesh processing skills to track a signed model.
3. It works best on high-polygon-count (size > 20MB), organic models, but is less effective on solid models.

Highlight

Online tools for adding watermark, such as www.watermark3d.com, has a serious problem: Anyone can check if an STL has a watermark and if a watermark has been successfully removed.

In contrast, a **MeshSafe** signature can only be viewed by its creator. Others cannot see the signature. Even when it is partly damaged, a hacker cannot verify that.

Sign on a model

Run **MeshSafe**. Open an OBJ or STL model. Let's call it the **Master model**.

Click “File → Sign” and enter any text in a dialog box, preferably not too long.

A **Signed model** is saved in an export folder. The signature is best viewed from an on-axis viewing angle, i.e. X, Y, or Z direction.

Scan for a signature

Click “File → Scan”; select the **Master model** on the first dialog box; then select the **Signed model** on the second dialog box.

It may take **MeshSafe** some time to scan for a signature. If a signature is found, it will be shown in the window; otherwise, an error message will be shown.

Distribute a model

You can distribute a **Signed model** to a customer, who may use it for all kinds of activities, such as viewing and 3D printing. The customer cannot see the signature.

Do NOT distribute the **Master model**. It is for you to scan for a signature on a **Signed model**.

Track a model

You plan to sell a model to many customers. You generate several signed models; each is signed with a customer's name; then it is distributed to the person.

Later, someone resells/releases your model without permission. You get a copy of the “illegal” model and use **MeshSafe** to scan for a signature to find out who the person is.

Sign on multiple models

“File → Open” multiple model files and press Left and Right, or Up and Down keys to view the models.

“File → Sign” all the models with some text. They will be saved in an export folder.

To sign with other text, just click “File → Sign” again; there is no need to reopen the models.

Batch → Load

You have several **Master Models** saved in different folders under a parent folder. You hope to sign all the models with several different signatures. In this case, “Batch → Load folder” and “Batch → Sign” is useful to you.

“Batch → Load folder” will load all models recursively from a specified folder.

Batch → Sign

“Batch → Sign” will generate **Signed Models** and save them recursively to a folder.

The signatures are read from a text file, in which each signature occupies a line.

You should avoid selecting the source folder as the export folder; otherwise the **Master Models** may be overwritten.

Sign on a big model with many parts

If a big model has many parts (separate model files), you should sign on all part files.

If you only sign on the big model, the signature will be incomplete or missing when the model is split into parts.

Beauty of the system

As said earlier, the system can be fooled but not that easy. Recall that a person who has a **Signed model** only cannot see the signature, even when he/she is a user of **MeshSafe**.

The person may make changes to the **Signed model** but he/she does not know if the signature has become unrecognizable.

This feature alone will stop 50% of crimes as many people do not like taking risks!

The rest 50%

The rest 50% are jokers who commit crimes for fun, batmen who do not trust the system, and dumb and dumber who have no idea that you are a user of **MeshSafe**.

They will do something to the **Signed model** but as far as our tests show to make a signature unrecognizable, the model has to undergo severe changes, leading to loss of detail, and making it worthless.

Key to safety box

The key to your safety box is the **Master model**. Do not loss it or you will not see any signature on your **Signed models**.

You may delete **Signed models** after distributing them to your customers.

No signature found

If **MeshSafe** says “No signature found”, it is most likely that a **Signed model** is not aligned with the **Master model**.

You may use any 3rd party software to rotate, translate, and/or rescale the **Signed model** to properly align with the **Master model**. The more precise you align the models, the more easily you see the signature.