

Evaluation of Most Popular Open Source 3D Modelling Tools

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1) ABSTRACT

3D modelling tools are computer graphics software used to create 3D models and animations. Different tools has different abilities and different usage areas. It is important to choose effective software for requirements otherwise inadequate or unnecessary features may decrease effectiveness. In this report 3D modelling tools are evaluated according to their feature set, extensibility and community support criteria. Blender, K-3D and Art of Illusion open source 3D modelling tools are selected for this evaluation. Official information of tools on their websites are analyzed for evaluation. Blender get ahead in feature set criteria. Blender and K-3D are better than Art of Illusion for community support criteria. And all three are sufficient enough and close to each other when topic comes to extensibility yet Blender is slightly better at extensibility. Evaluation results that Blender is clearly the best option for professional 3D modelling in overall.

2) INTRODUCTION

This report was prepared for evaluate most popular open source 3D modelling tools to select right 3D modelling tool. The report prepared for consideration of three common evaluation criteria. These criteria are feature set, extensibility and community support respectively. This report begins with evaluation of tools according to evaluation criteria. Then, conclusion and recommendation are presented.

3) METHODS AND APPROACH

All the feature information about 3D modelling tools are taken from their official websites. External website links are investigated on official websites. Any external website which are not referenced from official website is not taken into consideration. So only official sources and their unofficial referenced sources are used to prepare this report.

4) EVALUATION

Blender, K-3D and Art of Illusion 3D modelling tools are evaluated according to feature set, extensibility and community support criteria.

a) Feature Set

These software meets different requirements for different purposes. So all of these software may have special properties that others have not. In this section; feature set of Blender, K-3D and Art of Illusion are explained in detail.

i) Feature Set of Blender

Blender is 3D modelling and animation software for Linux, Microsoft Windows and Mac OS operating system.

Blender has powerful rendering engine called Cycles that gives ultra-realistic rendering also it is compatible with external engines through plugins. Blender includes built in video editing, animating, sculpting and fast UV unwrapping tools with the help of fast rigging, camera tracking, particle, smoke and fluid simulation tools. [1]

Blender also can be used as game engine. It is possible to create a fully featured 3D game with build in Blender game engine. Blender game engine offers ability to import third-party game engine models. It is possible to create or code game logic in blender game engine. Game engine supports all OpenGL features like dynamic lighting, toon shading and animated materials.

Most powerful tool among others in respect to feature set range. Very extendable

ii) Feature Set of K-3D

K-3D is 3D modeling, animation, and rendering system software for Linux, Microsoft Windows and Mac OS operating system.

K-3D has object-oriented plugin architecture which is designed to meet the needs of professional artists. K-3D has extensible rendering engine called RenderMan that generates motion-picture-quality animations. [2]

K-3D has very powerful scene graph procedural modeling and animation tools with complete modeling history. It has visualization pipeline to connect any object property to any other compatible model property.

iii) Feature Set of Art of Illusion

Art of Illusion is 3D modelling and animating software written in Java. It gives high quality photorealistic images and animations with a rendering engine called fast raster engine. It supports motion blur, depth of field, global illumination and caustic effects. Rendering is done via rendering scene files which contains 3D objects, windows and animation. Scenes can contain hundreds of objects and animation can contain several windows to make interesting animation sequence. [3]

b) Extensibility

All of these 3D modelling tools are extensible in some level but all of them choose different ways to do it. In this section; extensibility of Blender, K-3D and Art of Illusion are explained in detail.

i) Extensibility of Blender

Blender comes with large range of extensions which can be enabled or disabled easily. It support many different standard format and extension with and import and export capability. [1] Blender is slightly better at extensibility among others.

ii) Extensibility of K-3D

K-3D offers extensible support for external rendering engines and models also it supports external script engine plugins and environments so K-3D is powerful in respect to expandability. [2]

iii) Extensibility of Art of Illusion

Art of Illusion includes a scripting language called Beanshell scripting language which offers creation of new types and tools apart from built in types. Also there are several available plugins and scripts to allow additional objects and tools. [3]

c) Community Support

All software needs support to overcome problems. This support may be documentations or user forums. They may be official or unofficial online web sites or books. In this section; community support for Blender, K-3D and Art of Illusion are explained in detail.

i) Community Support for Blender

Blender has huge official documentation with FAQ's, tutorials and manual books on its website. It has developer documentation and bug tracing system on its website. Also there are a lot of unofficial community tutorials and discussion forums on external websites for Blender. [4] Community support for Blender is the largest one among others.

ii) Community Support for K-3D

K-3D has large user and developer documentation with tutorials, discussion forum and mailing list. [5] It also have unofficial discussion forums.

iii) Community Support for Art of Illusion

There are online user manual and wiki pages for Art of Illusion. Also there are some external forum pages about it. [6] Art of Illusion is weak community support among others. Official documentation is out of date and user forums are unfrequented.

5) CONCLUSION

These three 3D modelling tools are alternatives of each other. All of them have similar features. But they have different user profile and different areas. They are valuated according to feature set, extensibility and community support.

In respect to feature set, Blender has largest range of feature. K-3D and Art of Illusion have relatively close range of feature set.

All three 3D modelling tools are extensible enough to meet regular user's extension requirements. Three of them have different ways to extent their structure but Blender has most easy structure for expandability.

Blender and K-3D offers large official and unofficial community support. They are sufficient for regular user to solve their problems via community support. On the other hand Art of Illusion users can only rely on unofficial discussion forums.

In conclusion Blender is clearly the best option for professional 3D modelling in overall evaluation.

6) REFERENCES

- [1] <http://www.blender.org/features/>
- [2] <http://www.k-3d.org/wiki/Features>
- [3] <http://www.artofillusion.org/docs/AoI%20Manual/layout.html#overview>
- [4] <http://www.blender.org/support/user-community>
- [5] <http://www.k-3d.org/wiki/Support>
- [6] <http://www.artofillusion.org/links>