

Mitsuba for Maya

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ABSTRACT

The goal of this project is to create an intuitive and easy to use interface between the Autodesk Maya modeling software and Mitsuba physically based renderer. Mitsuba is a rendering system built by Wenzel Jakob while he was a Phd student at Cornell University. The focus of the renderer is to explore advance research oriented rendering techniques, such as Metropolis Light Transport, Energy Redistribution Path Tracing, and Virtual Point Lights, among others. Another feature of the system is extremely accurate BRDFs. The downside to Mitsuba is that to use, one has to create scene files from scratch. This is extremely tedious, and can lead to unnecessary headaches on behalf of the user. This project will serve as the intermediary between the user and the rendering engine. Taking the user created geometry, surfaces, and lighting, and converting them to the Mitsuba scene file format.

Project Blog: blog.jeremynewlin.info/search/label/seniordesign

1. INTRODUCTION

As stated, Mitsuba is a very difficult renderer to use currently. Parameter tuning via xml files is tedious and unpleasant, and as such achieving satisfactory results can be frustrating at times. Therefore, Mitsuba will be under utilized by the artistic user that does not want to concern themselves with such technical details.

This problem is interesting to the production community because it prevents advanced integration techniques from becoming commonplace due to the lack of satisfactory interface to Mitsuba. With a more approachable user-interface, those techniques can gain a more mainstream appeal and feasibility.

Many users in the animation industry are familiar with Autodesk Maya. The proposed solution is to incorporate Mitsuba into that in order to gain a more wide stream appeal. Since users are already accustomed to the entire pipeline in Maya, using it to interface with Mitsuba is not a stretch.

This project makes the following contributions:

- An intuitive interface to work with the Mitsuba rendering engine.

1.1 Design Goals

Who is the target Audience for your project? How does the audience benefit? What goals or objectives will you solve for the user?

The target audience for this project is the artistic community within animation. They will benefit by having easy access to an advanced rendering system.

1.2 Projects Proposed Features and Functionality

- A Maya plugin that interface to Mitsuba
- Integration scheme support
- Surfacing supports
- Lighting support
- Animation support
- Batch rendering support

2. RELATED WORK

The main related work are other similar plugins, such as V-Ray for Maya, Mental Ray for Maya, Renderman for Maya, and Mitsuba for Blender.

3. PROJECT PROPOSAL

3.1 Anticipated Approach

The user will create a scene as normal in Maya. However, there will now be Mitsuba shaders, lights, and integrators. The user will build a scene using these specialized objects. Then the user will provide a number of other settings. After the user is finished with the scene, this project will convert the Maya scene to a Mitsuba scene and send it to the renderer.

3.2 Target Platforms

Maya

3.3 Evaluation Criteria

The main criterion for the success of this project is going to be the ease of use as evaluated by artists. My advisor Scott White will be the main user and provide the most feedback. I also plan on asking students in the lab and Scott's class to evaluate my plugin.

4. RESEARCH TIMELINE

Finally, we would like you to speculate about the pace of your research progress. This section need not be long, but we would like you to specify several milestones which we can use to gauge your progress throughout the semester. If this is a group project, please list who is responsible for which tasks. For example:

Project Milestone Report (Alpha Version)

- Completed all background reading
- Able to render simple scenes with default lighting and shaders

Project Final Deliverables

- Fully functional plugin that exposes all of Mitsuba's important functionality to the user
- Plugin available for immediate use
- Documentation

Future Tasks

I would like to add support for multi-machine rendering through Maya in the future. This would allow for rapid rendering.

#	Task name	September	October	November	December
1	Explore similar plugins				
2	Export geometry				
3	Export simple materials				
4	Export lighting				
5	Export animation				
6	Export general transformation				
7	Batch rendering				
8	Mac version				
9	Fully functioning plugin				