Team e10

3D SCANNER

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RACHELLE DAUPHIN - CpE
NICOLAS CARDENAS - CpE

Introduction

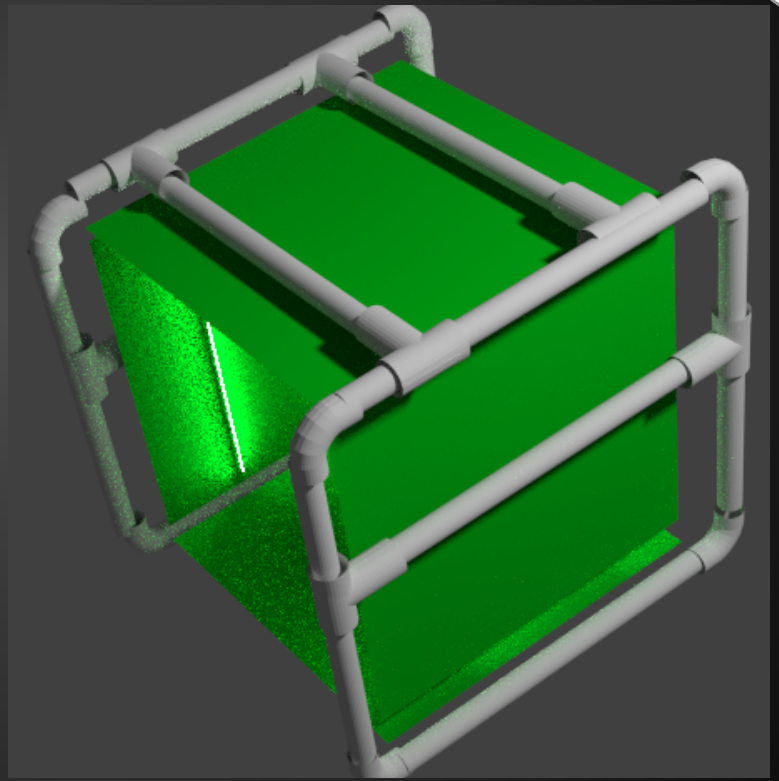
Aubrey Tharpe

Project Overview

Purpose

Current design

Why not lasers?



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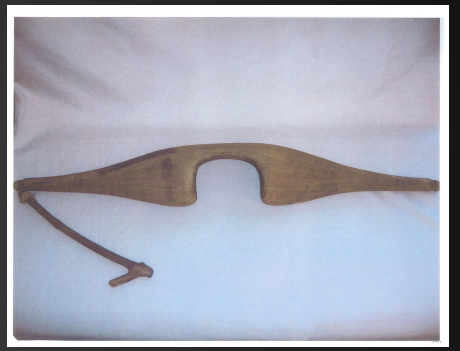
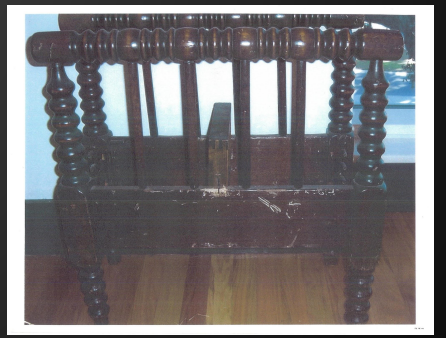
Sample Artifacts





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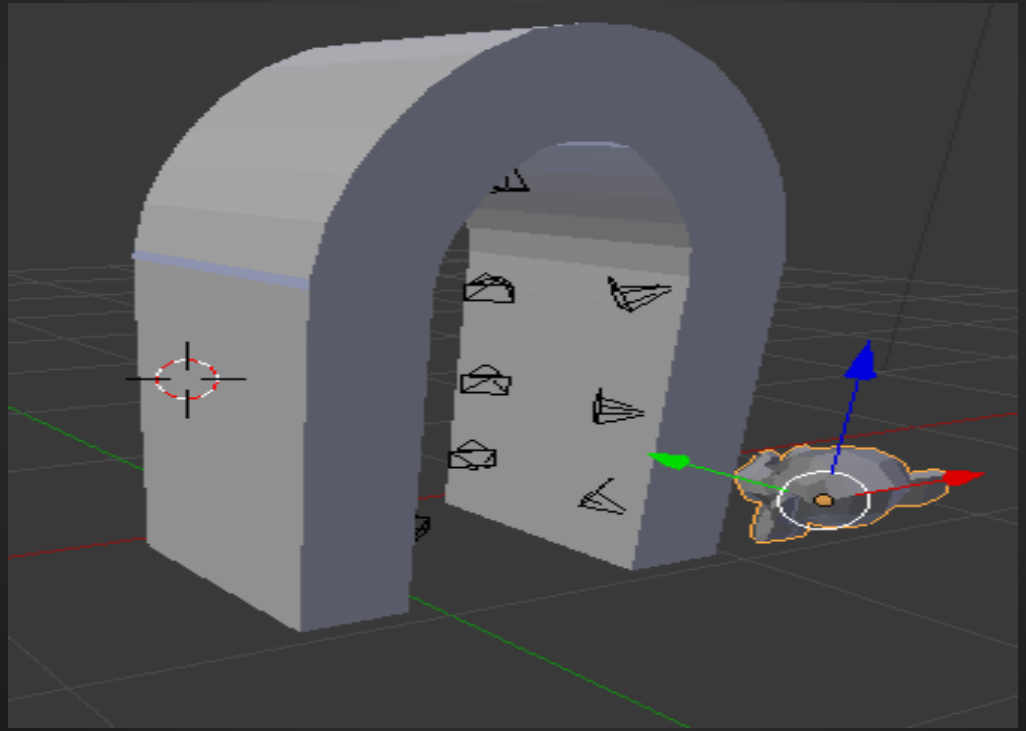
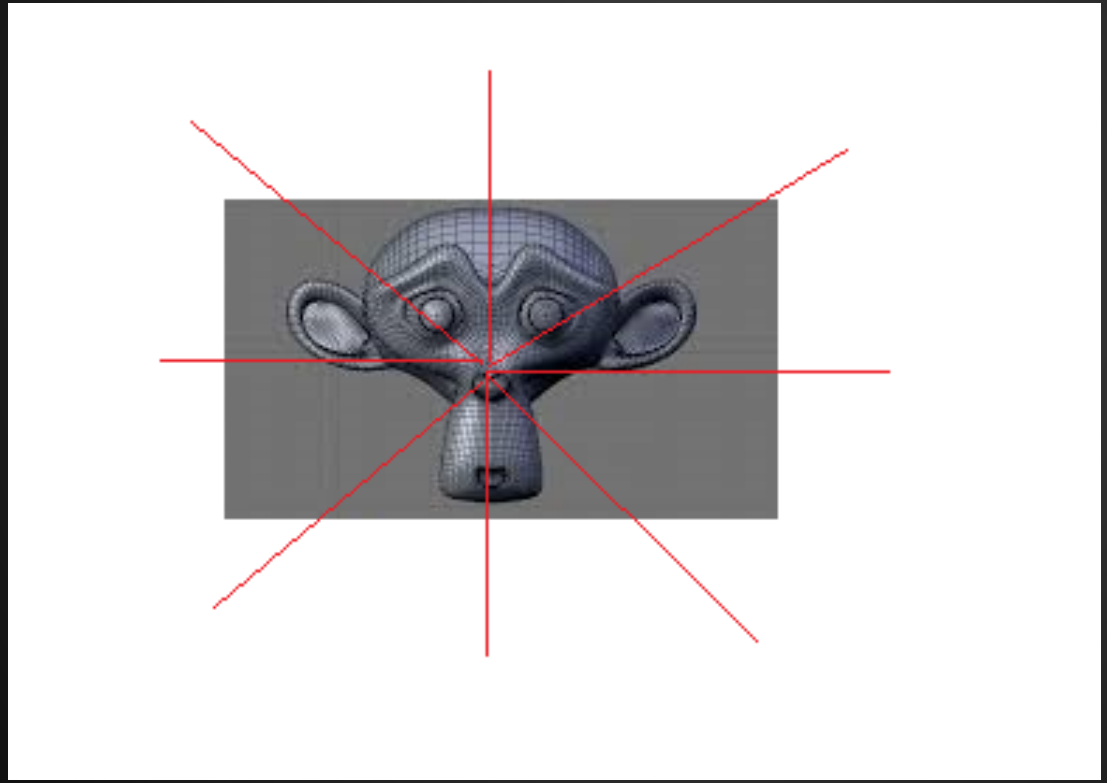
Cameras reduced to 1

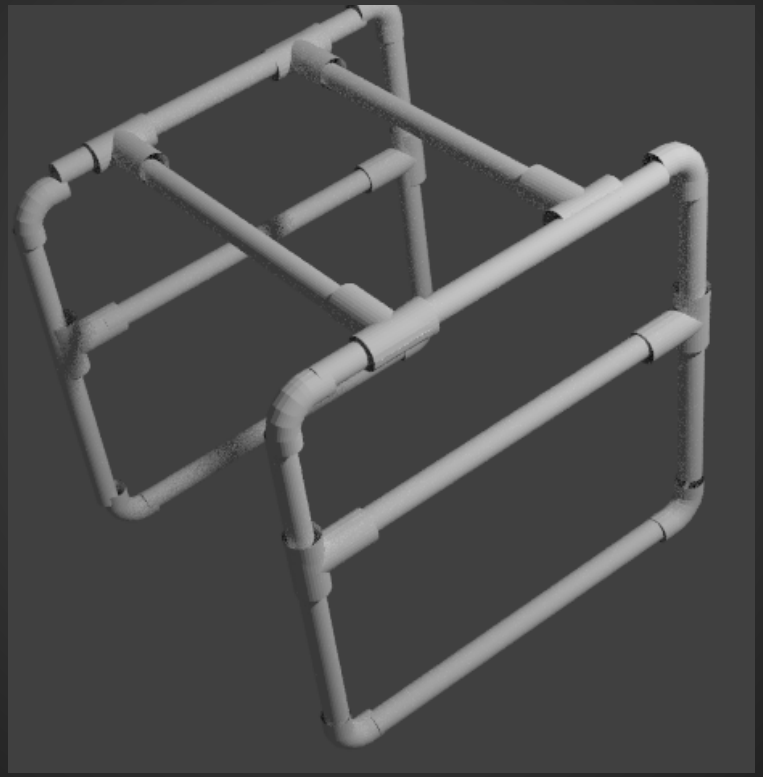


Taylor Wagner

Camera Angle Test



Frame



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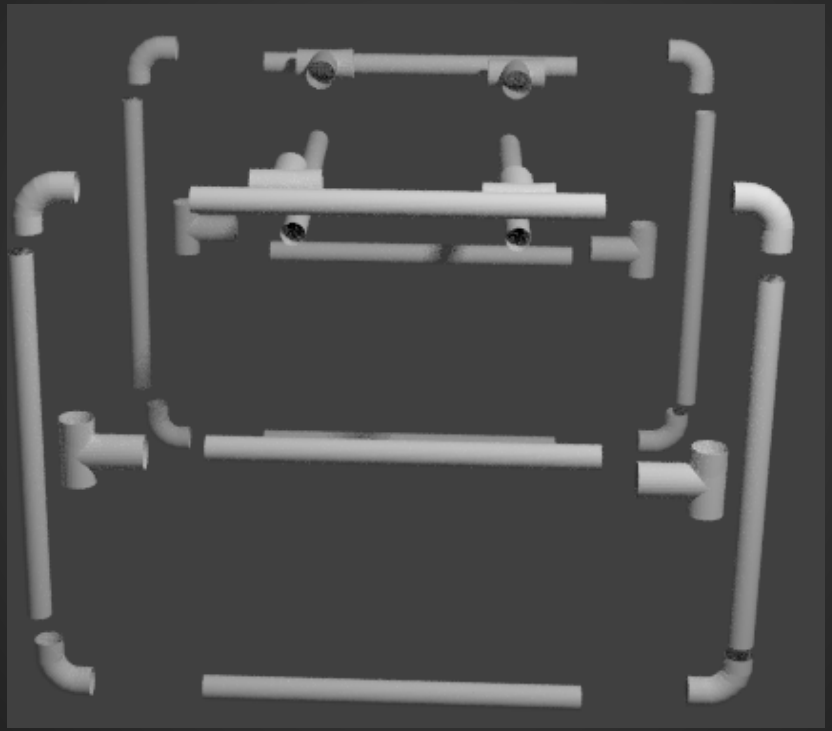
Frame (exploded parts)



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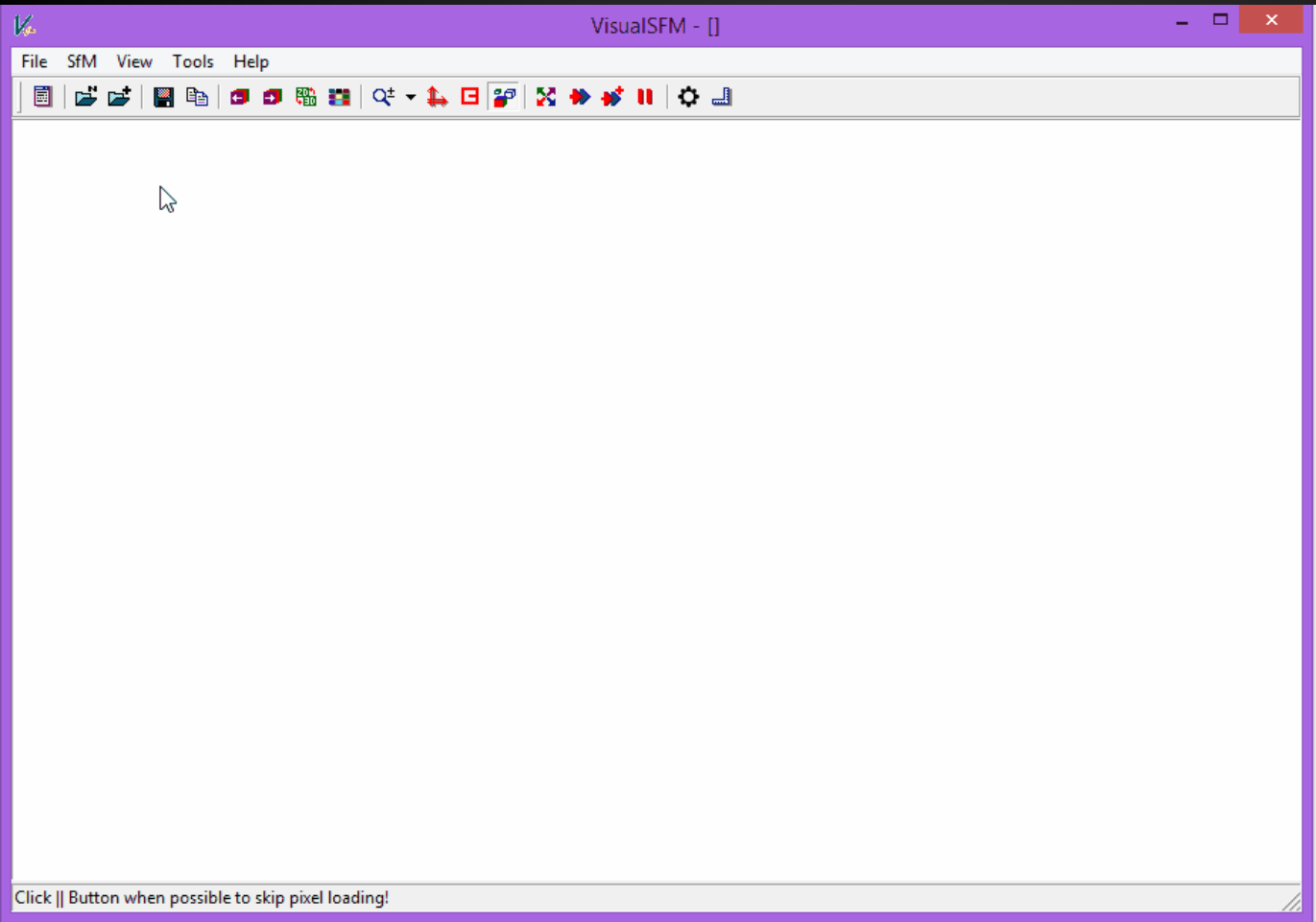
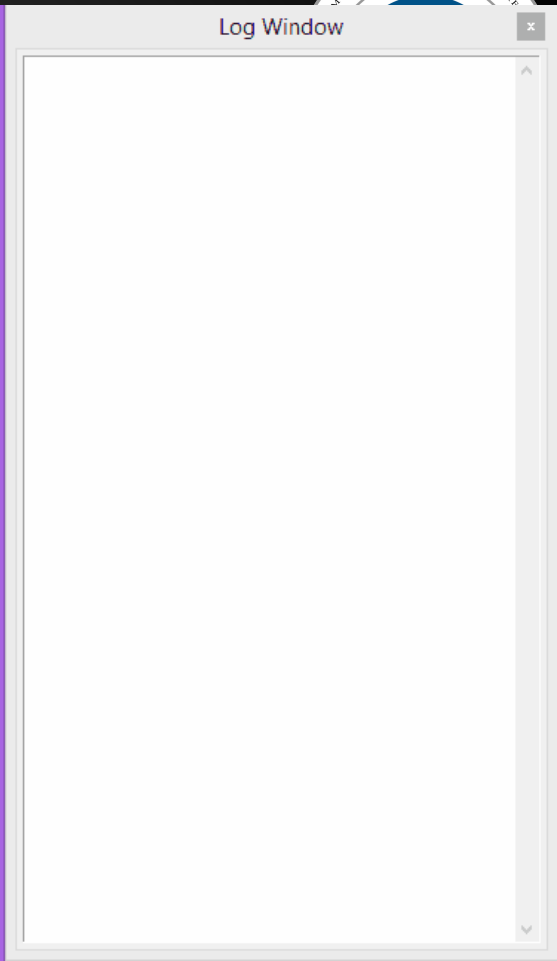
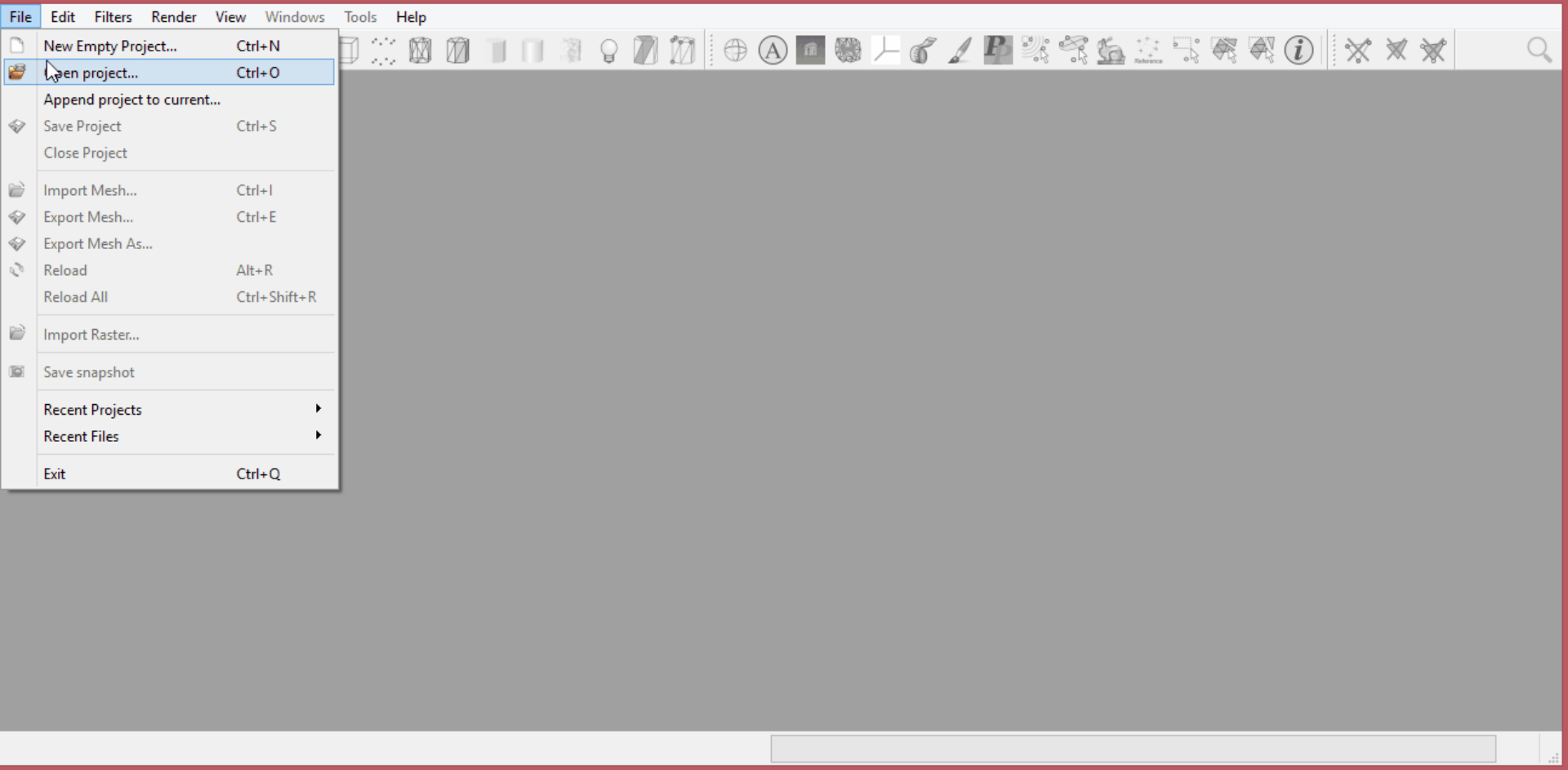

VisualSFM - []
File
SfM
View
Tools
Help
Click || Button when possible to skip pixel loading!


Log Window


File
Edit
Filters
Render
View
Windows
Tools
Help
New Empty Project... Ctrl+N
Open project... Ctrl+O
Append project to current...
Save Project Ctrl+S
Close Project
Import Mesh... Ctrl+I
Export Mesh... Ctrl+E
Export Mesh As...
Reload Alt+R
Reload All Ctrl+Shift+R
Import Raster...
Save snapshot
Recent Projects
Recent Files
Exit Ctrl+Q

Cover - Specification

LimoStudio 5 x 10 ft Chromakey Green Muslin

- Green screen background allows software to easily detect and remove unwanted negative space isolating the artifact using chroma keying
- Chroma keying: technique for compositing two images together based on the color hues.

Chromakey Green Muslin Requirement and Specification

Dimensions (ft)	5 x 10
Material	polyester fabric
Characteristics	Non-gloss surface Lightweight and wrinkle-resistant
Backdrop Holders Maximum Load (lbs)	5

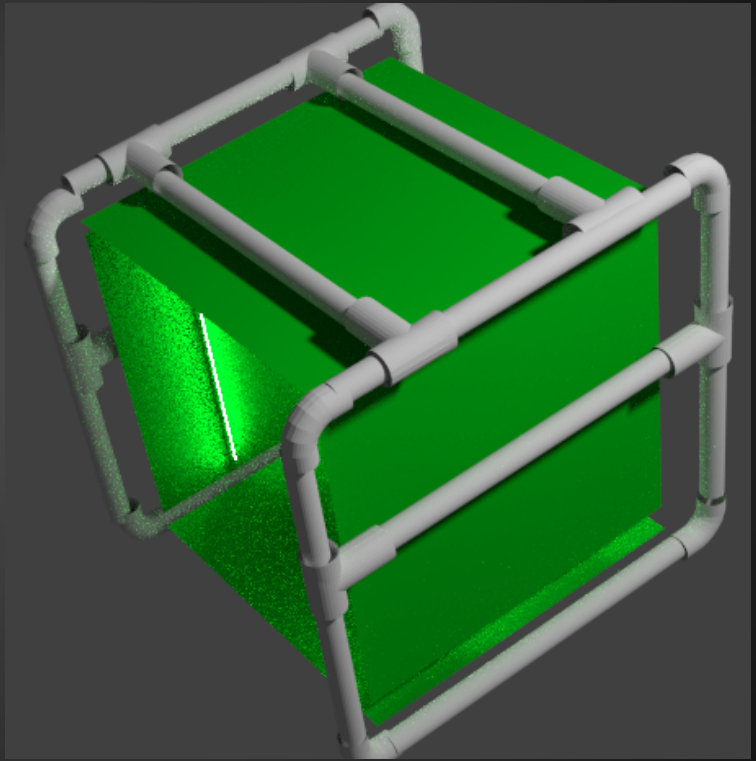
Rachelle Dauphin

Cover - Design

The green screen will line the interior of the box including the bottom.

Loops will be fastened to the frame which will be attached to the muslin to keep it in place.

Muslin will be tightly secured (stretched) onto the frame to prevent wrinkles.



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Cover

Technical Risk and Test Plan

Technical Risk

Color Spill

Color spill occurs when the color reflects off the back screen and casts a noticeable tint on the subject. If the lighting is too bright or the background isn't dark enough, the chances of color spill are increased.

Test Plans

	Associated Test	Status	Results
1.	Component Test	Not Tested	N/A
2.	Color Spill Test	Not Tested	N/A

Example of color spill (left) and color spill correction (right)

Rachelle Dauphin

Lighting - Specifications

LEDLIGHTWORLD SMD 3528 Flexible LED Strips

- LED does not produce heat in form of infrared which is harmful to fragile fabric
- Holds 300 SMD 3528 LED chips per strip
- Each strip requires a 110 - 220V AC to 12V DC power adapter
- Color temperature of between 5500 - 6500 K (Pure White)

LED Strip Lights Requirement and Specification

Length (cm)(ft)	500 (16.4)
Quantity of LEDs	300 (60 per meter)
Voltage (V DC)	12

Brightness difference between SMD LED diodes

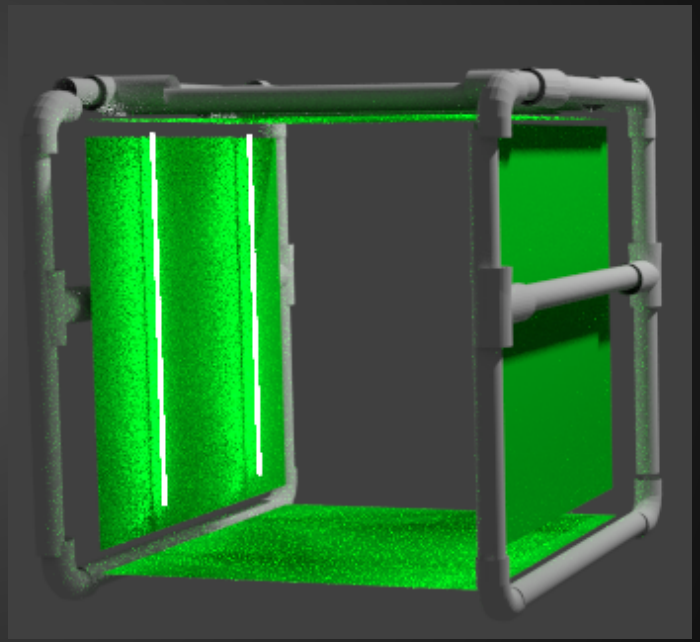
Rachelle Dauphin

Lighting - Design

Two or three strips will run vertically along the tunnel of the device starting from the base up the frame along the ceiling and to the base of the frame on the opposite side.

If two is needed, the two strips' centers will be 1 foot inward from the edges.

If three is needed, the two outer strips' centers will be 0.5 feet inward from the edges, and the third's will be approximately 2 feet apart from the others.



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Lighting

Technical Risk and Test Plan

Technical Risk

Inconsistent Exposure

Possibility of the beam size being too small. If the dimensions of the frame is too large, when the light reaches the object in the center of the device, the light output could be too dim to illuminate the object thoroughly.

Brightness comparison between different LED SMD diodes

Test Plans

	Associated Test	Status	Results
1.	Component Test	Not Tested	N/A
2.	Even Exposure Test	Not Tested	N/A

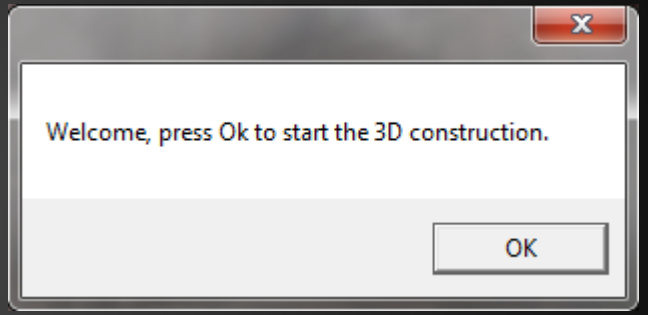
Rachelle Dauphin

The Script and its Overview

```
msgbox("Welcome, press Ok to start the 3D construction.")
dim x,box
set x=createobject("wscript.shell")

x.run("""c:\program files (x86)\autohotkey\autohotkey.exe""")
x.run("""C:\Program Files (x86)\VisualSFM_windows_64bit\VisualSFM.exe""")
wscript.sleep 1000
x.Sendkeys "^%r"

box=msgbox("Want to redo.",3,"VSM")
do while box=6
x.run("""c:\program files (x86)\autohotkey\autohotkey.exe""")
x.run("""C:\Program Files (x86)\VisualSFM_windows_64bit\VisualSFM.exe""")
wscript.sleep 5000
x.Sendkeys "^%r"
box=msgbox("Want to redo.",3,"VSM")
loop
```

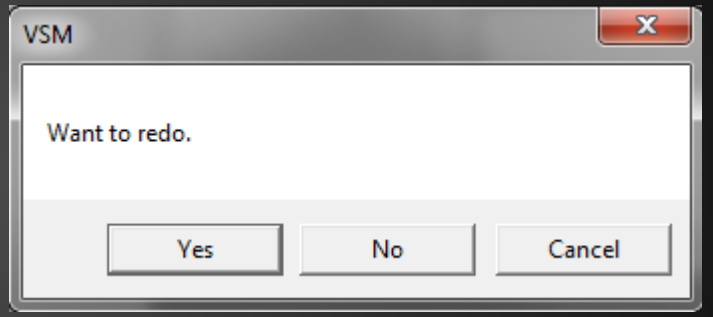


```
x.run("""C:\Program Files\VCG\MeshLab\meshlab.exe""")
box=msgbox("Want to redo.",3,"ML")

do while box=6
x.run("""C:\Program Files\VCG\MeshLab\meshlab.exe""")
box=msgbox("Want to redo.",3,"ML")
loop

x.run("""C:\Program Files\Blender Foundation\Blender\blender.exe""")
box=msgbox("Want to redo.",3,"Blender")

do while box=6
x.run("""C:\Program Files\Blender Foundation\Blender\blender.exe""")
box=msgbox("Want to redo.",3,"Blender")
loop
```



The ^!r is what triggers the script to run click is a function that will click the mouse at those coordinates

Autohotkey

```
^!r::
click 14,33
click 35.159
return
```

Budget Estimation

D.Expense				
Item	Distributer	Cost($)	Quantity	Total ($)
Samsung ES10	Donated by Taylor	0.00	1	0.00
Acrylic Sheet	Home Depot	57.00	1	57.00
PVC Pipe	Home Depot	4.49	6	26.94
PVC Joint	Home Depot	4.49	8	9.52
PVC Tee	Home Depot	1.74	8	13.91
Green Screen Muslin 5’ x 10’	Amazon	15.00	2	30.00
LED Stip Lights	LEDLightsWorld	35.95	3	107.85
LED Power Adaptor	LEDLightsWorld	7.90	3	23.70

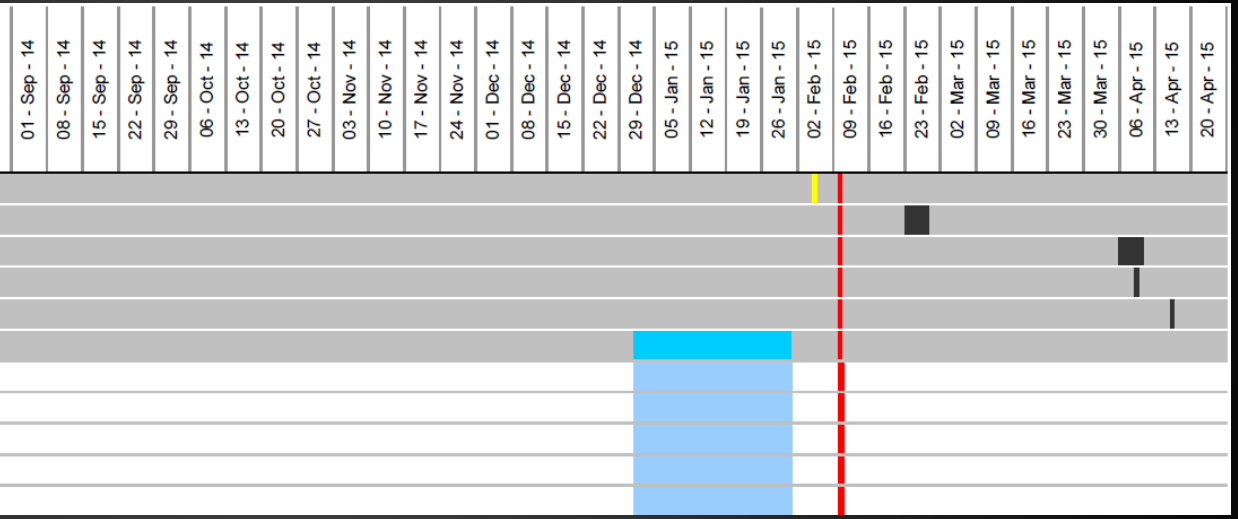
Budget Estimation (Cont'd)

Options

Item	Distributer	Costs($)	Quantity	Total ($)
Computer	Walmart	500.00	1	500.00
Other	-	-	-	150.00
Total Cost	-	-	-	918.92
Total Cost (no computer)	-	-	-	418.92
Total Cost (no computer and no other cost)	-	-	-	268.92
Budget Left	-	-	-	$731.08

Schedule

WBS	Tasks	Start	End	Duration (Days)	% Complete
3	DDR&TP	2/5/15	2/5/15	0	0%
4	Midterm HW/SW Review	2/23/15	2/27/15	5	0%
5	Final Demo	4/6/15	4/10/15	5	0%
6	Senior Design Fair	4/9/15	4/9/15	1	0%
7	Final Report	4/16/15	4/16/15	1	0%
10	Revise Final Design	1/1/15	1/31/15	31	100%
10.1	Bed	1/1/15	1/31/15	31	100%
10.2	Cameras	1/1/15	1/31/15	31	100%
10.3	Cover	1/1/15	1/31/15	31	100%
10.4	Lighting	1/1/15	1/31/15	31	100%
10.5	Frame	1/1/15	1/31/15	31	100%



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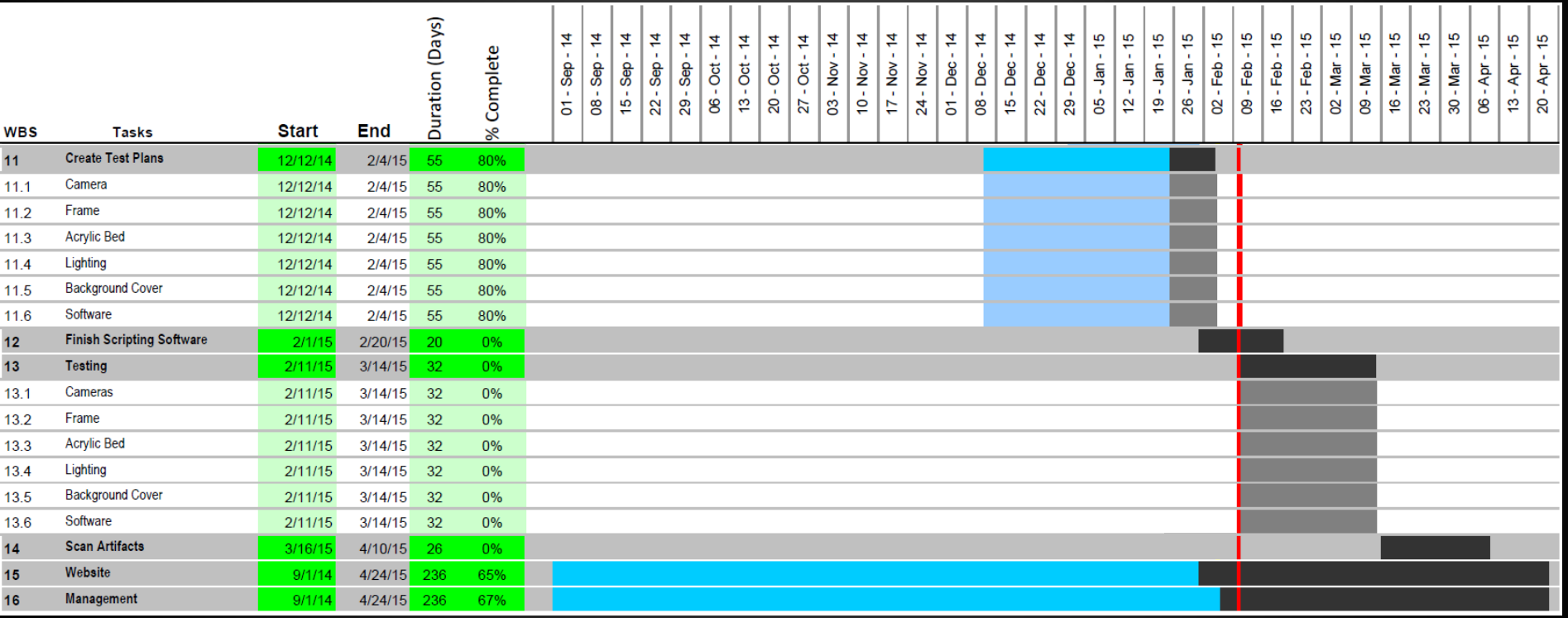
Schedule



WBS	Tasks	Start	End	Duration (Days)	% Complete
11	Create Test Plans	12/12/14	2/4/15	55	80%
11.1	Camera	12/12/14	2/4/15	55	80%
11.2	Frame	12/12/14	2/4/15	55	80%
11.3	Acrylic Bed	12/12/14	2/4/15	55	80%
11.4	Lighting	12/12/14	2/4/15	55	80%
11.5	Background Cover	12/12/14	2/4/15	55	80%
11.6	Software	12/12/14	2/4/15	55	80%
12	Finish Scripting Software	2/1/15	2/20/15	20	0%
13	Testing	2/11/15	3/14/15	32	0%
13.1	Cameras	2/11/15	3/14/15	32	0%
13.2	Frame	2/11/15	3/14/15	32	0%
13.3	Acrylic Bed	2/11/15	3/14/15	32	0%
13.4	Lighting	2/11/15	3/14/15	32	0%
13.5	Background Cover	2/11/15	3/14/15	32	0%
13.6	Software	2/11/15	3/14/15	32	0%
14	Scan Artifacts	3/16/15	4/10/15	26	0%
15	Website	9/1/14	4/24/15	236	65%
16	Management	9/1/14	4/24/15	236	67%

Aubrey Tharpe

Questions?

Aubrey Tharpe