

## How to render a point cloud

This tutorial is a culmination of info that I found on the internet

Some steps were missing so I created a step by step tutorial to help make folks life easier

After the probing is done a co-ordinate point data file is created you will need to render all the data into a stl file.

Watch this awesome video <http://www.youtube.com/watch?v=4RZUN23VsZQ#t=147>

Blender is a free and easy program to use.

<http://www.blender.org/download/>

You need a point cloud skinner add on

<http://sourceforge.net/projects/pointcloudskin/files/latest/download?source=files>

this is the original thread

<http://blenderartists.org/forum/showt...>



### 1. Installing Plugin ---

- 1. Download a file "t26\_PointCloudSkinner1\_Umbrella.zip" from "Download:" link above.
- 2. Close Blender if it's running.
- 3. Put the file "t26\_PointCloudSkinner1\_Umbrella.zip" to "%BlenderInstalledAddress%\Blender\%Version%\scripts\addons\". (%BlenderInstalledAddress% means the address in which Blender is installed. %Version% means Blender's version number like 2.66.)

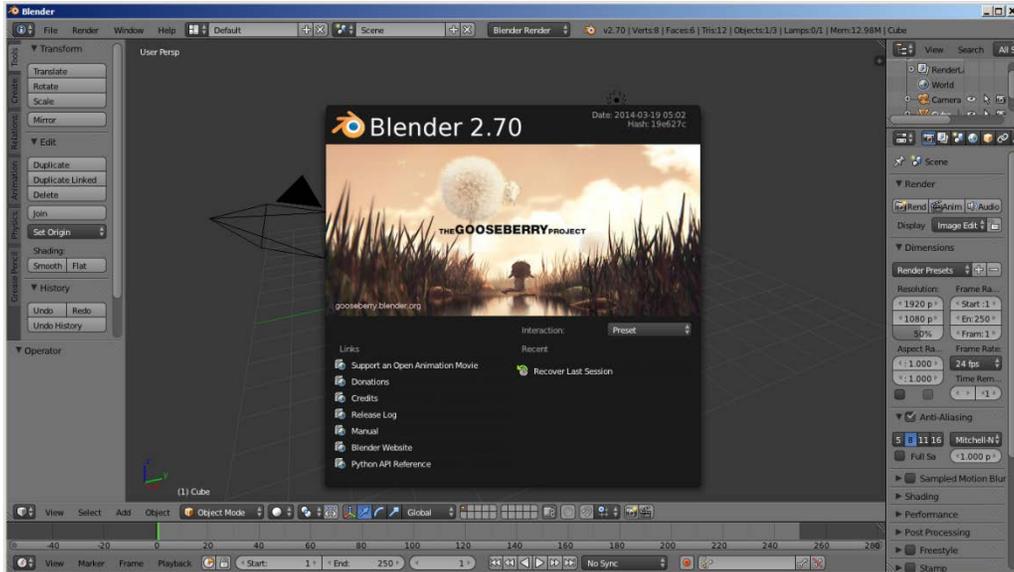
As you can see above cut and paste the zip file in the addons file

When you fist open up blender it will look like this

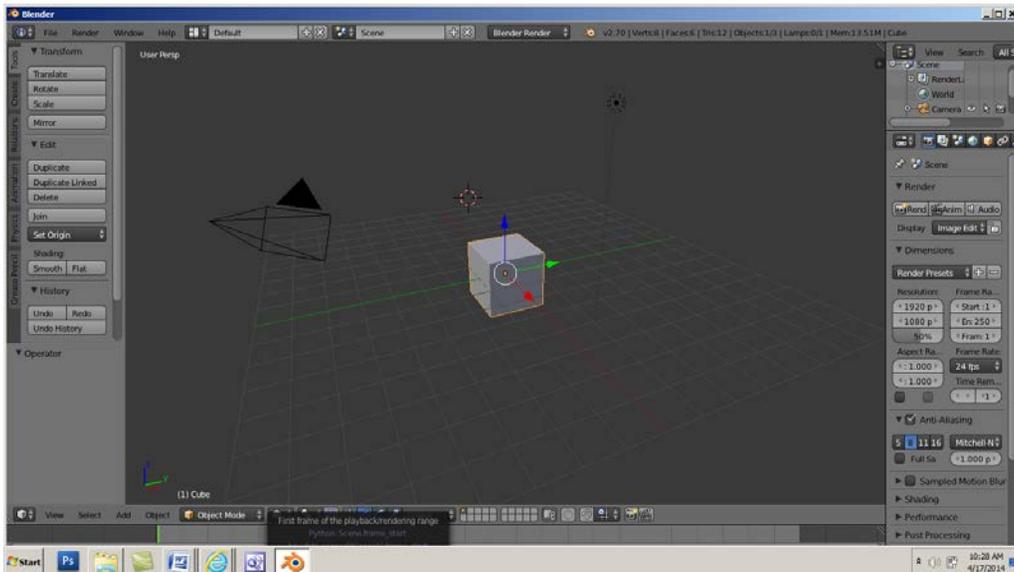
1) Read the The Gooseberry project opening screen.

I donated money to the project for providing a great program

To get rid of this screen place your cursor outside of the box and click



To get rid of the cube in the middle of the screen by selecting an area of the cube with your cursor then type x on your keyboard and a menu will appear  
Then select delete from the small popup menu

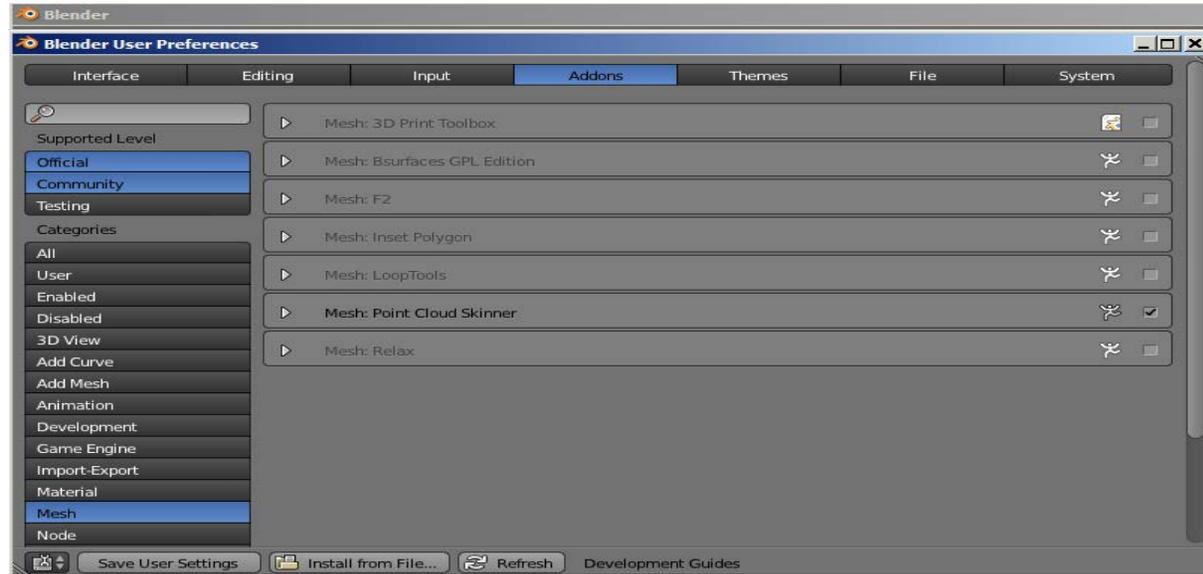
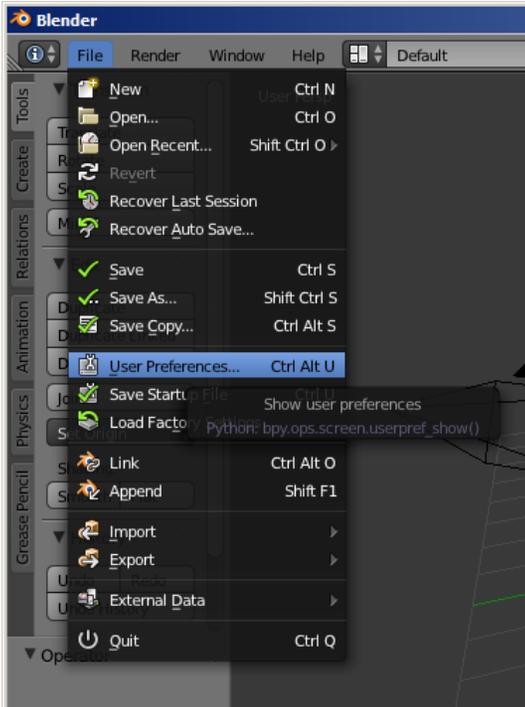


To get rid the rest of the objects I put my cursor on them right click then hit the x key this will prompt you to delete the object

Check if the skinner is installed correctly by going to the file/user preferences tab and open up the user preferences screen

Select the addons tab the select the mesh tab

You need to check the box next to Mesh: Point Cloud Skinner as seen below

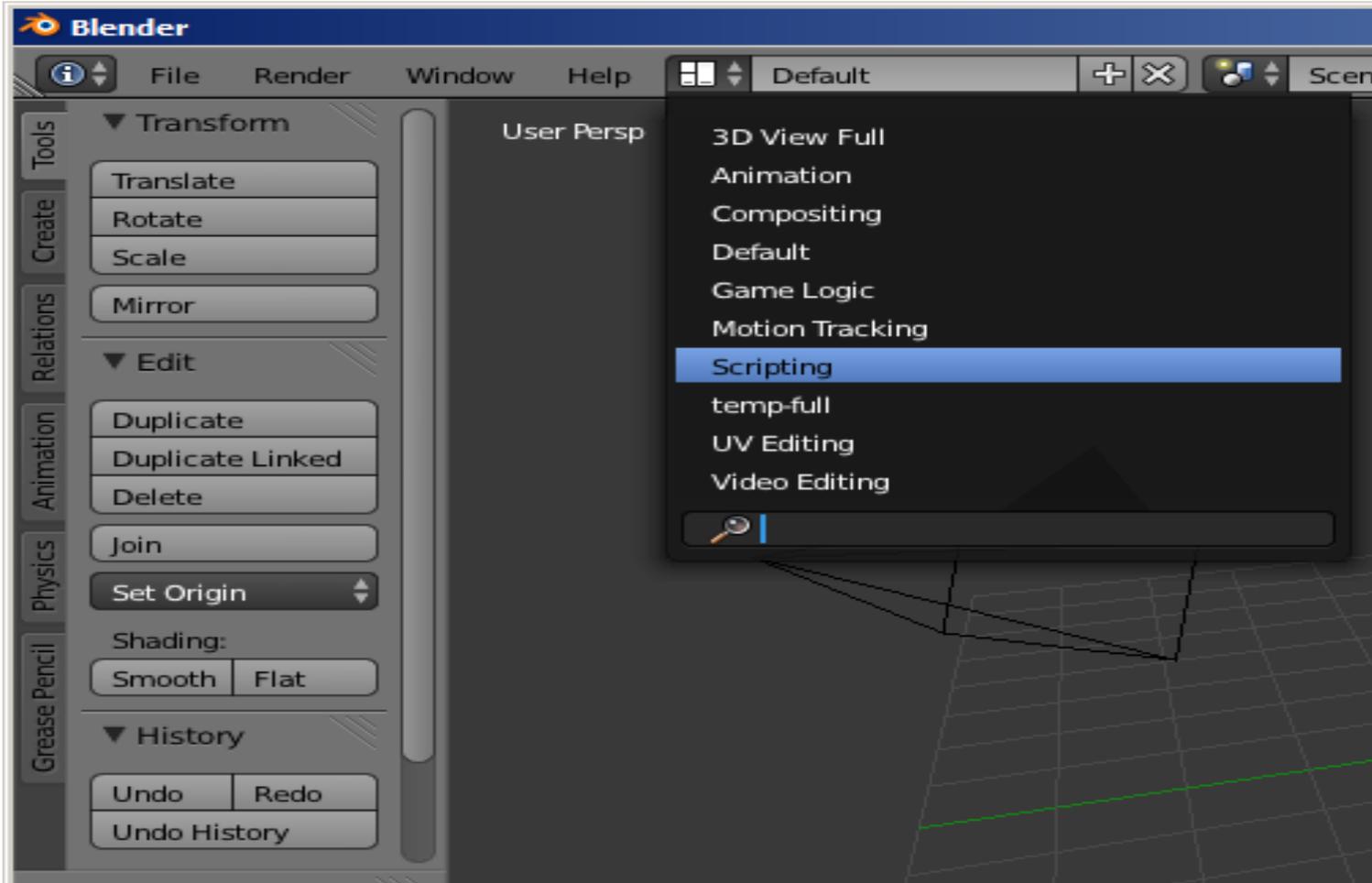


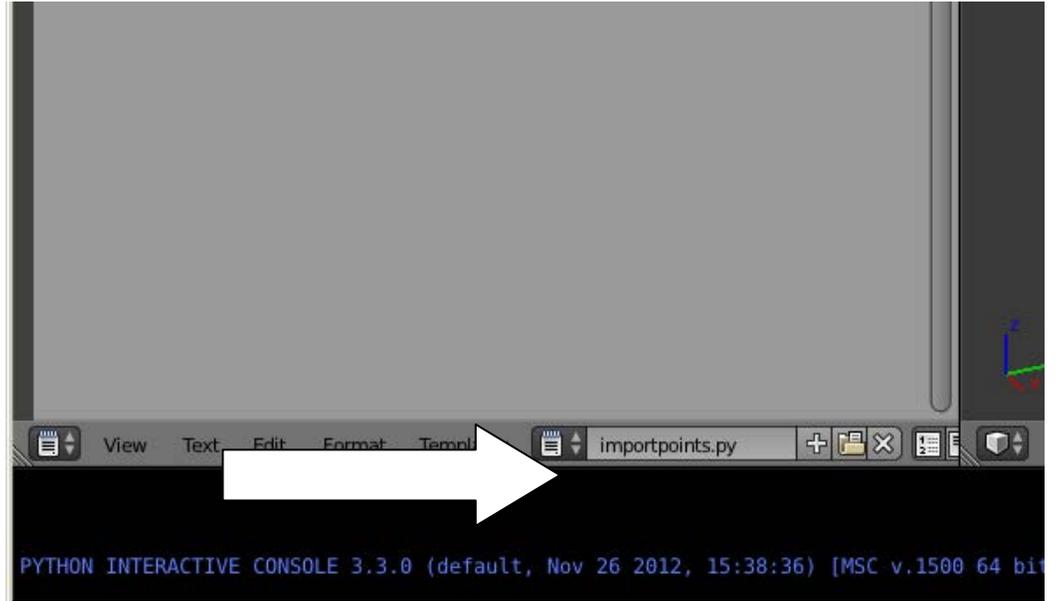
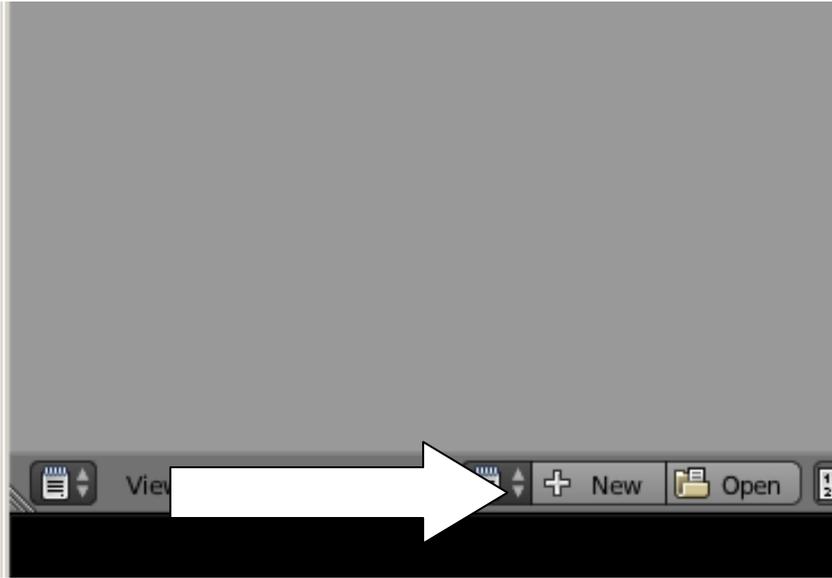
You need a script to convert coordinate points from Mach 3 to vertices in blender: <http://groklab.org/tormach/2012/04/04/importing-points-to-blender/>

this was written by Brian Johns

Go to the box that says default on the top of the screen.

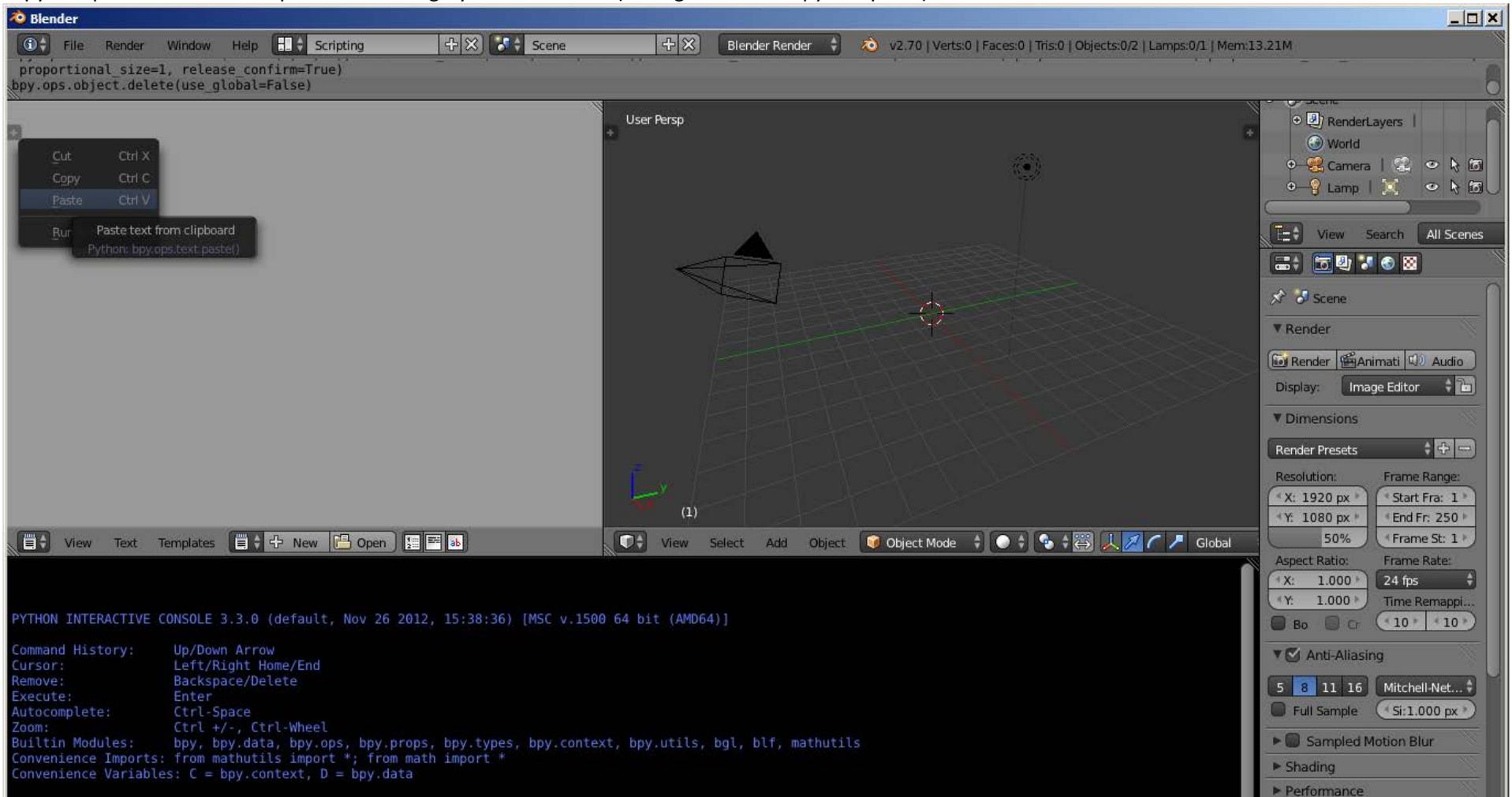
Use the arrow button on the left side of the word default this will bring up a popup window select scripting





Change new to importpoints.py

Copy and paste the whole script below to the gray box on the left (use right click to copy and paste)



```

import bpy #import the blender module

##### PLEASE SPECIFY YOUR PATH AND FILE FOR DIGITIZING DATA #####
#path='Insert Path here' eg 'C:\Users\Me\Documents\DigitizingData\Mydata.txt'
path='C:\\text.txt'

#####

#Open the file
try:
    f=open(path, 'r')
except:
    print ("Path is not Valid")

#Create an array of vertices
ve=[]
for line in f: #Go through file line by line
    try:
        read=f.readline().split(',') #Read a line, split it on the comma
        ve.extend( [float(read[0]), float(read[1]), float(read[2])] ) #Extend the array
    except:
        print ("Could not use the line reading: %s"%read)

# Create a new mesh, it is now empty
mesh = bpy.data.meshes.new("Cube")

# Create empty vertices field in the mesh
mesh.vertices.add(len(ve)/3)

# Add vertices
mesh.vertices.foreach_set("co", ve)

```

```
#Add a new empty object named "My Digitized Data"  
obj = bpy.data.objects.new("My Digitized Data", mesh)
```

```
# Link object to current scene  
bpy.context.scene.objects.link(obj)
```

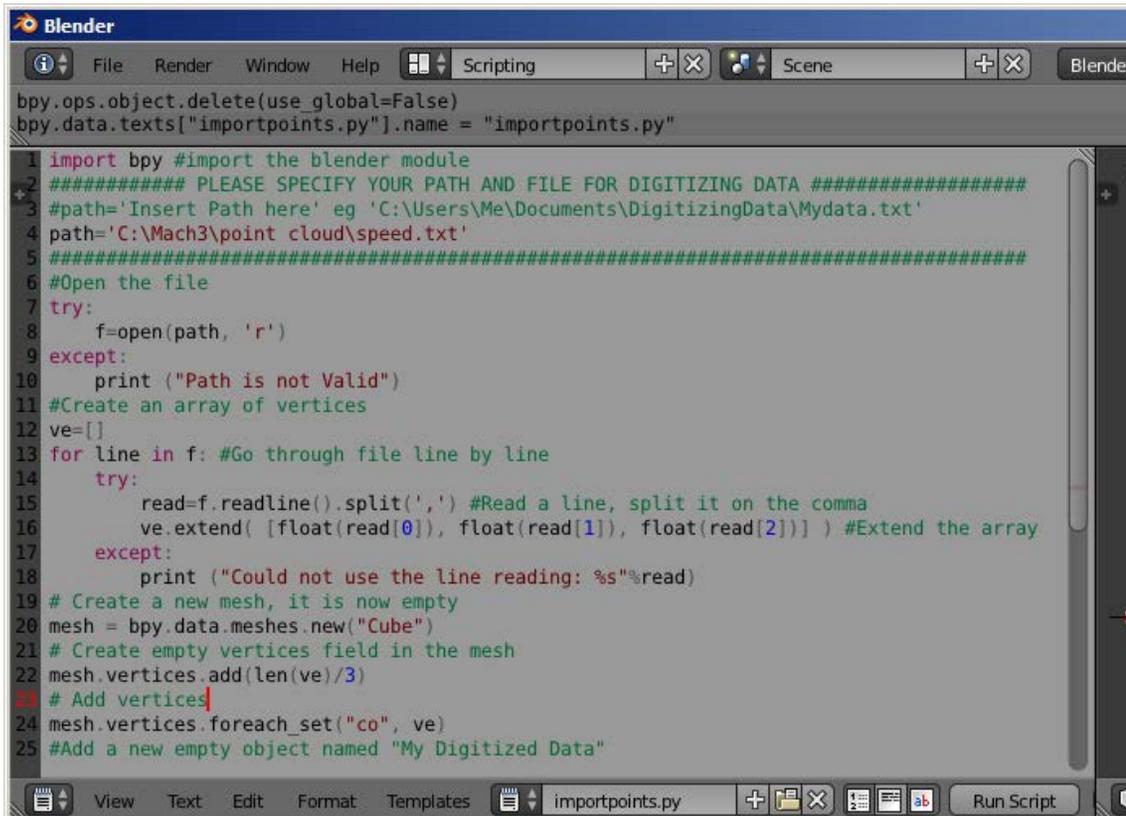
Next you need to change the path where the file is located

When you see this on the top of the 'C:\\text.txt' script change

It too where your file is located For example 'C:\\Mach3\\point cloud\\speed.txt'

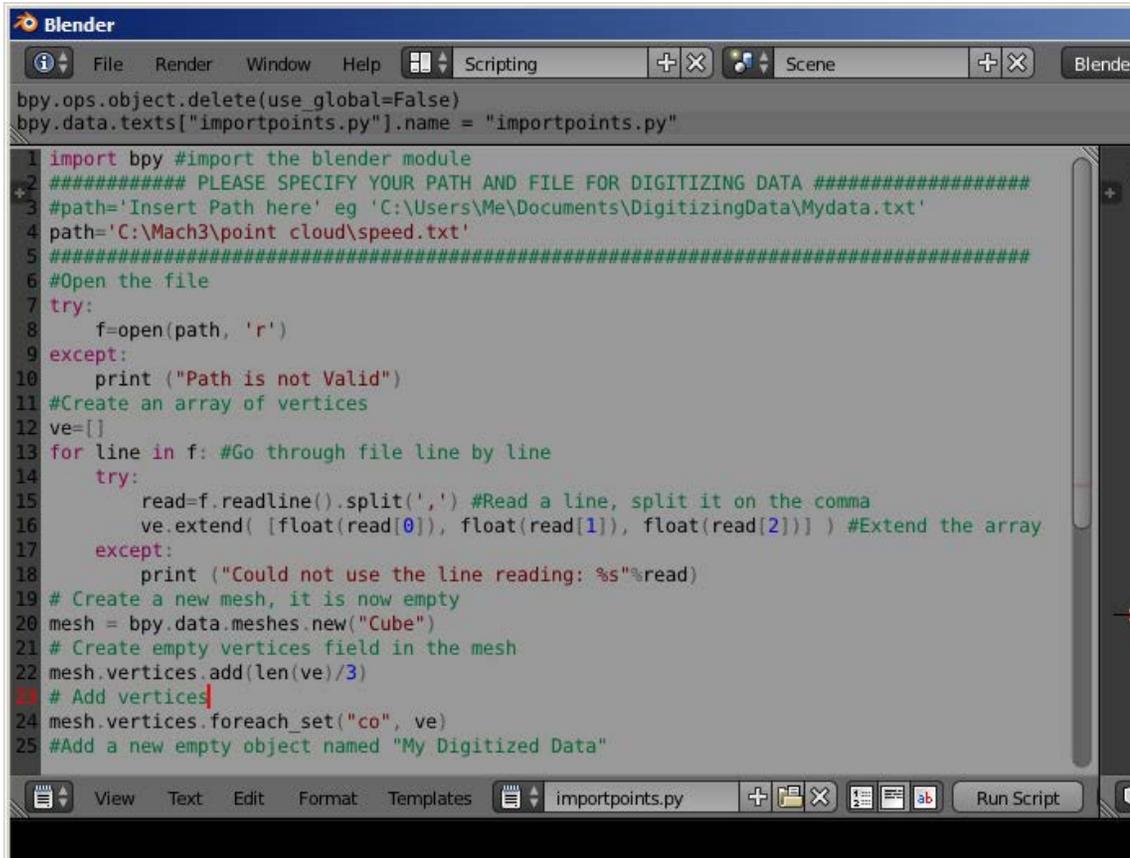
When you save the file to a folder you must put .txt at the end of the file

Look at the top of the script



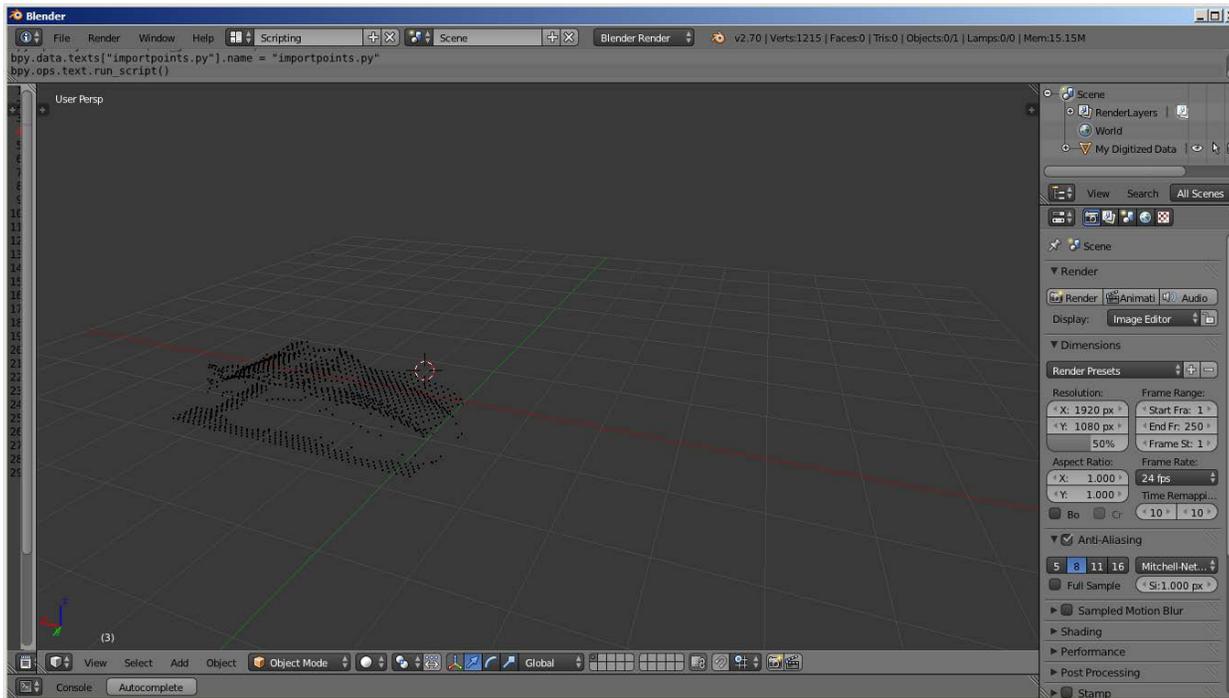
```
Blender  
File Render Window Help Scripting Scene Blender  
bpy.ops.object.delete(use_global=False)  
bpy.data.texts["importpoints.py"].name = "importpoints.py"  
  
1 import bpy #import the blender module  
2 ##### PLEASE SPECIFY YOUR PATH AND FILE FOR DIGITIZING DATA #####  
3 #path='Insert Path here' eg 'C:\\Users\\Me\\Documents\\DigitizingData\\Mydata.txt'  
4 path='C:\\Mach3\\point cloud\\speed.txt'  
5 #####  
6 #Open the file  
7 try:  
8     f=open(path, 'r')  
9 except:  
10     print ("Path is not Valid")  
11 #Create an array of vertices  
12 ve=[]  
13 for line in f: #Go through file line by line  
14     try:  
15         read=f.readline().split(',') #Read a line, split it on the comma  
16         ve.extend( [float(read[0]), float(read[1]), float(read[2])] ) #Extend the array  
17     except:  
18         print ("Could not use the line reading: %s"%read)  
19 # Create a new mesh, it is now empty  
20 mesh = bpy.data.meshes.new("Cube")  
21 # Create empty vertices field in the mesh  
22 mesh.vertices.add(len(ve)/3)  
23 # Add vertices  
24 mesh.vertices.foreach_set("co", ve)  
25 #Add a new empty object named "My Digitized Data"
```

When the script is finished hit the run script button and the point cloud will appear on the stage



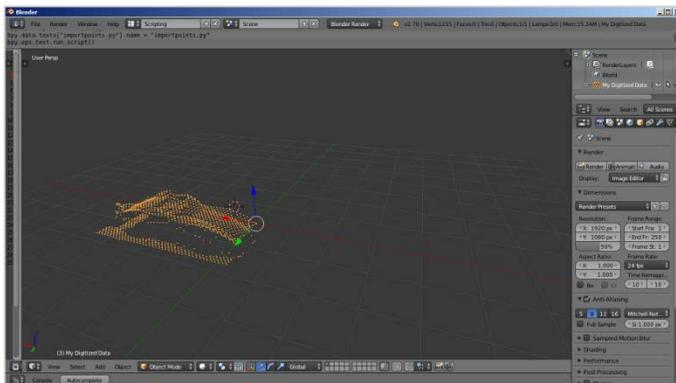
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bpy.ops.object.delete(use_global=False)
bpy.data.texts["importpoints.py"].name = "importpoints.py"

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6 #Open the file
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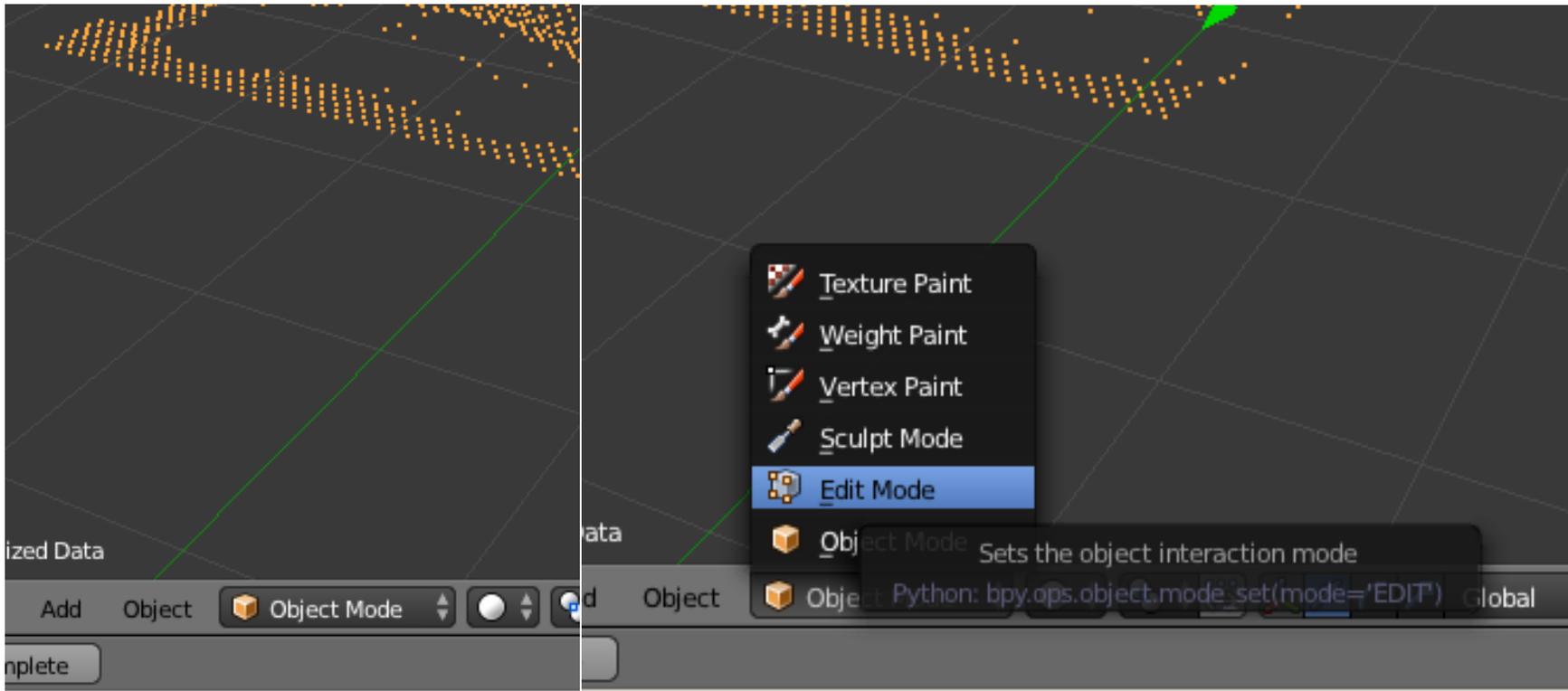
I expanded the screen by clicking on the borders and moving the unneeded screens out of the way

To zoom in on the object you can hit the control +

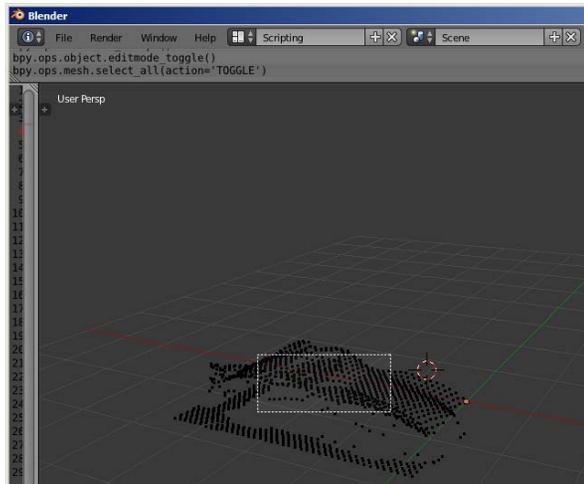


To select all the points right click and then you can edit what points you want to edit by

going to the bottom of the screen and switching from object mode to edit mode

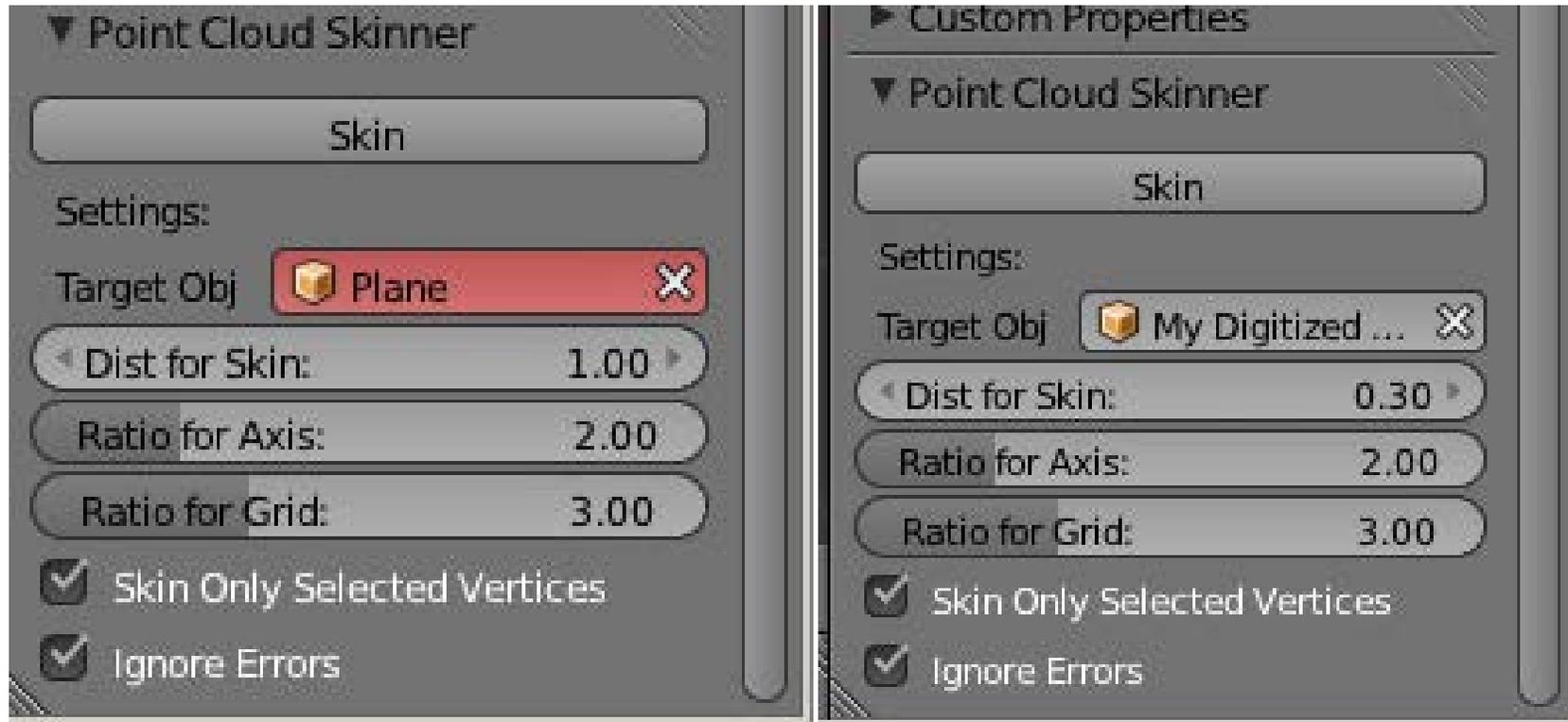


Then you can edit the points you want to use by deselecting the points by hitting a then type b to create a bounding box

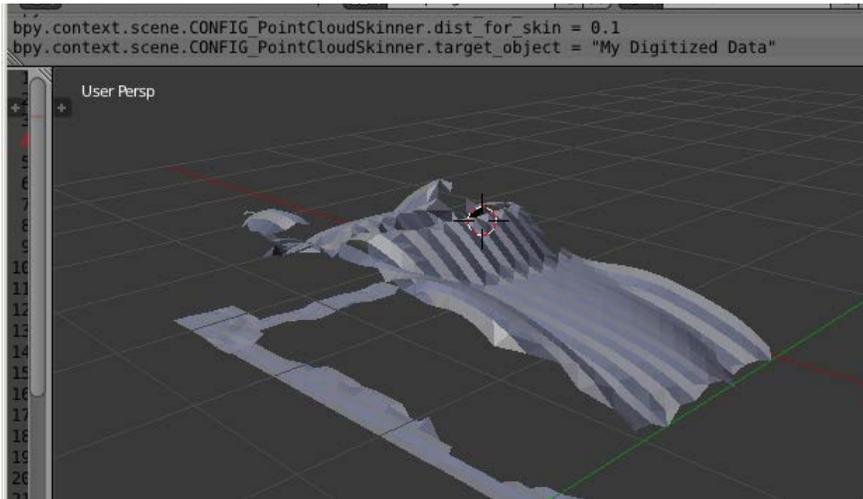


Go to scen tab again and go all the way to the bottom to the point cloud skinner box and change Target object to My Digitized Data

Also change Dist for skin to a smaller number like .3



The object I probed was interrupted several times my curious children touching the key board



This is what it looks like when skinned

If the distance for skin is set to high there will be dots in addition to the skin

You can save this for you cad software

By exporting it as an stl file

