

Python to measure number of points in stl files

Here is the python for measuring the stl points (numpy-stl is used):

```
import sys

from stl import mesh

def get_stats(stl_file):
    # Load the STL files
    your_mesh = mesh.Mesh.from_file(stl_file)

    # Get the number of points
    num_points = len(your_mesh.points)

    # Return the stats as a tuple
    return num_points, stl_file

# Get the list of STL files from command line arguments
stl_files = sys.argv[1:]

# Get the stats for each STL file
stats = [get_stats(stl_file) for stl_file in stl_files]

# Sort the stats by the number of points (smallest to largest)
stats.sort()

# Print the sorted stats
for num_points, stl_file in stats:
    print(f"{num_points:>15} {stl_file:<30}")
```

On Windows, I also have this batch wrapper, which allows for dragging and dropping multiple stl files, at once, for determining the number of points:

```
@echo off

echo Make terminal wide

pause
```

```
REM Change the path below to the path of your Python interpreter
set
PYTHON_PATH="C:\Users\Glenn\anaconda3\envs\xiwings\python.exe"
```

```
REM Change the path below to the path of your Python script
set SCRIPT_PATH="D:\Glenn\Documents\stl_stats.py"
```

```
%PYTHON_PATH% %SCRIPT_PATH% %*
```

Pause

Test Picture:



Suggested Workflow

Select your image for use for color layers, using Photoshop/Affinity photo or Color Layer python script.

Create a palette file with ALL the filaments you have on hand, and have colors values for, set to true.

Run PIXEstL on the color layer image, with the all filaments palette file. You can add -Z false to skip creating a texture layer (you will need a texture layer created from your original image (not the one for color layers).

My computer is pretty beefy with 12 threads and 32 GB RAM, so to get this large a palette file to run on a lessor machine you may need additional PIXEstL or java flags to have longer timeouts and/or lower memory consumption, higher java heap size maximum.

This palette file has 20 filaments set to true, with 7 layers. However I had to specify 5 layers to get it to run without memory errors.

```
java -Xmx24432m -jar PIXEstL.jar -p "D:\Glenn\Downloads\PIXEstL-0.3.0\new-bambu-in-stock-all-true 6-19-24.json" -w 100 -cW 0.42 -l 5 -f 0.24 -b 0.1 -
```

```
Z false -Y -i "C:\Users\Glenn\OneDrive\Pictures\test.jpg"
```

```
Palette generation... (30174 colors found)
```

```
Calculating color distances with the image...
```

```
Nb color used=6760
```

```
Generating previews...
```

```
Generating STL files...
```

```
Layer[0.0] :Black[PLA Basic], Dark Blue[PLA Matte], Blue[PLA Basic], Mistletoe Green[PLA Basic], Brown[PLA Basic], Gray[PLA Basic], Silver[PLA Basic], Bambu Green[PLA Basic], Purple[PLA Basic], Red[PLA Basic], Grass Green[PLA Matte], Cyan[PLA Basic], Ice Blue[PLA Matte], Gold[PLA Basic], Sakura Pink[PLA Matte], Magenta[PLA Basic], Beige[PLA Basic], Yellow[PLA Basic], Orange[PLA Basic], White[PLA Basic]
```

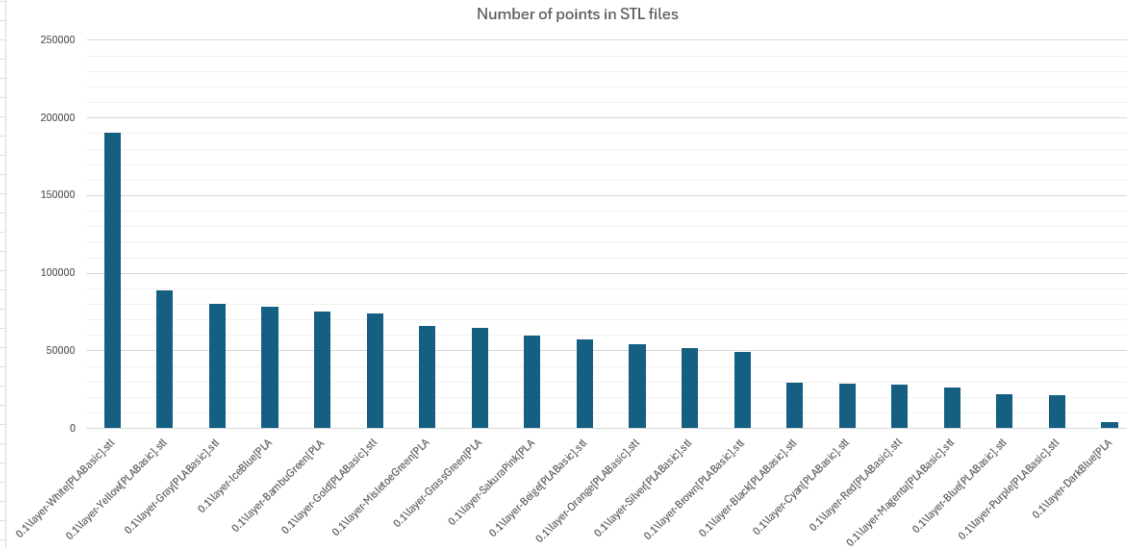
```
GENERATION COMPLETE ! (165035 ms)
```

In any case this will take a while to run, depending on how may filaments you have.

Once the PIXEstL color layer run is done, unzip the output folder and observe which filaments were used (.stl file names).

(Assuming windows) Drag and drop all the color layer stl files, skipping the base layer, onto stl_stats.bat.

190800	0.1\layer-White[PLABasic].stl
88836	0.1\layer-Yellow[PLABasic].stl
80280	0.1\layer-Gray[PLABasic].stl
78480	0.1\layer-IceBlue[PLA
75072	0.1\layer-BambuGreen[PLA
73992	0.1\layer-Gold[PLABasic].stl
66348	0.1\layer-MistletoeGreen[PLA
64908	0.1\layer-GrassGreen[PLA
59868	0.1\layer-SakuraPink[PLA
57612	0.1\layer-Beige[PLABasic].stl
54384	0.1\layer-Orange[PLABasic].stl
51912	0.1\layer-Silver[PLABasic].stl
49320	0.1\layer-Brown[PLABasic].stl
29724	0.1\layer-Black[PLABasic].stl
29196	0.1\layer-Cyan[PLABasic].stl
28020	0.1\layer-Red[PLABasic].stl
26220	0.1\layer-Magenta[PLABasic].stl
21888	0.1\layer-Blue[PLABasic].stl
21612	0.1\layer-Purple[PLABasic].stl
4320	0.1\layer-DarkBlue[PLA



This identifies the filaments in order of their usage in the picture. However we only have 2 AMSs so 8 filaments max. Examining the first 8 colors we see multiple shades of green, and no shades of red, yet we know there are small patches of red in the picture. So, we will drop the 7th filament, Grass Green, and substitute Red.

Make a palette file with those 8 filaments set to true and run PIXEstL again (no we can go to 7 layers, as there are fewer filaments to process):

```
java -Xmx24432m -jar PIXEstL.jar -p "D:\Glenn\Downloads\PIXEstL-0.3.0\test img.json" -w
100 -cW 0.42 -l 7 -f 0.24 -b 0.1 -Z false -Y -i "C:\Users\Gle
```

```
nn\OneDrive\Pictures\test.jpg"
```

```
Palette generation... (4874 colors found)
```

```
Calculating color distances with the image...
```

```
Nb color used=2401
```

```
Generating previews...
```

```
Generating STL files...
```

```
Layer[0.0] :Mistletoe Green[PLA Basic], Gray[PLA Basic], Bambu Green[PLA Basic], Red[PLA
Basic], Ice Blue[PLA Matte], Gold[PLA Basic], Yellow[PLA Basic], White[PLA Basic]
```

```
GENERATION COMPLETE ! (17936 ms)
```

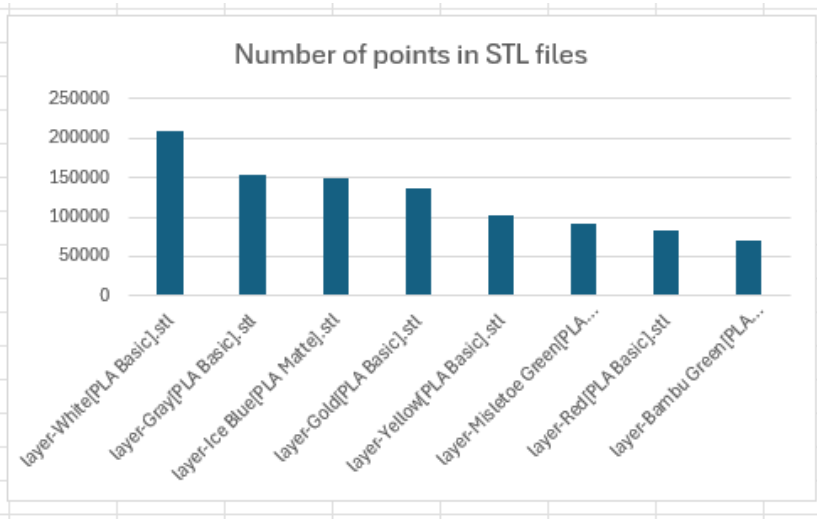
Dragging the resultant stl files into stl_stats.bat we get:

```

C:\WINDOWS\system32\cmd. x + v
Make terminal wide
Press any key to continue . . .
71304 C:\Users\Glenn\OneDrive\Pictures\test img.json -w 100 -cW 0.42 -l 7 -f 0.24 -b 0.1 -Z false -Y\layer-Bambu Green[PLA Basic].stl
82332 C:\Users\Glenn\OneDrive\Pictures\test img.json -w 100 -cW 0.42 -l 7 -f 0.24 -b 0.1 -Z false -Y\layer-Red[PLA Basic].stl
92160 C:\Users\Glenn\OneDrive\Pictures\test img.json -w 100 -cW 0.42 -l 7 -f 0.24 -b 0.1 -Z false -Y\layer-Mistletoe Green[PLA Basic].stl
102156 C:\Users\Glenn\OneDrive\Pictures\test img.json -w 100 -cW 0.42 -l 7 -f 0.24 -b 0.1 -Z false -Y\layer-Yellow[PLA Basic].stl
136224 C:\Users\Glenn\OneDrive\Pictures\test img.json -w 100 -cW 0.42 -l 7 -f 0.24 -b 0.1 -Z false -Y\layer-Gold[PLA Basic].stl
149004 C:\Users\Glenn\OneDrive\Pictures\test img.json -w 100 -cW 0.42 -l 7 -f 0.24 -b 0.1 -Z false -Y\layer-Ice Blue[PLA Matte].stl
153192 C:\Users\Glenn\OneDrive\Pictures\test img.json -w 100 -cW 0.42 -l 7 -f 0.24 -b 0.1 -Z false -Y\layer-Gray[PLA Basic].stl
209448 C:\Users\Glenn\OneDrive\Pictures\test img.json -w 100 -cW 0.42 -l 7 -f 0.24 -b 0.1 -Z false -Y\layer-White[PLA Basic].stl
Press any key to continue . . . |

```

Column1	Column17
209448	layer-White[PLA Basic].stl
153192	layer-Gray[PLA Basic].stl
149004	layer-Ice Blue[PLA Matte].stl
136224	layer-Gold[PLA Basic].stl
102156	layer-Yellow[PLA Basic].stl
92160	layer-Mistletoe Green[PLA Basic].stl
82332	layer-Red[PLA Basic].stl
71304	layer-Bambu Green[PLA Basic].stl



Color Preview:



Note that if there was another (important) color missing in the first run first 8, we would have dropped the lowest 2 used filaments, for substitution with the missing colors.

If there are two similar filaments, and you need to substitute more, you could remove the lesser used one. E.g. Silver and Gray.

Also note that you could experiment with copped/combined sections of the file to determine which “red” filament is best, etc.

Now here we have the output of the ColorLayer python app, with Lightness Threshold 2.0
Chrominance Threshold 3.



With the "all in stock" palette file:

```
java -Xmx24432m -jar PIXEstL.jar -p "D:\Glenn\Downloads\PIXEstL-0.3.0\new-bambu-in-stock-all-true 6-19-24.json" -w 100 -cW 0.42 -l 5 -f 0.24 -b 0.1 -Z false -Y -i "C:\Users\Glenn\OneDrive\Pictures\test -L 2 -C 3.jpg"
```

Palette generation... (30174 colors found)

Calculating color distances with the image...

Nb color used=1034

Generating previews...

Generating STL files...

Layer[0.0] :Black[PLA Basic], Dark Blue[PLA Matte], Blue[PLA Basic], Mistletoe Green[PLA Basic], Brown[PLA Basic], Gray[PLA Basic], Silver[PLA Basic], Bambu Green[PLA Basic], Purple[PLA Basic], Red[PLA Basic], Grass Green[PLA Matte], Cyan[PLA Basic], Ice Blue[PLA Matte], Gold[PLA Basic], Sakura Pink[PLA Matte], Magenta[PLA Basic], Beige[PLA Basic], Yellow[PLA Basic], Orange[PLA Basic], White[PLA Basic]

GENERATION COMPLETE ! (99061 ms)

```
C:\WINDOWS\system32\cmd. x + v
Make terminal wide
Press any key to continue . . .
5820 C:\Users\Glenn\OneDrive\Pictures\test -L 2 -C 3 new-bambu-in-stock-all-true 6-19-24.json -w 100 -cW 0.42 -l 5 -f 0.24 -b 0.1 -Z false -Y \layer-Red[PLA Basic].stl
6924 C:\Users\Glenn\OneDrive\Pictures\test -L 2 -C 3 new-bambu-in-stock-all-true 6-19-24.json -w 100 -cW 0.42 -l 5 -f 0.24 -b 0.1 -Z false -Y \layer-Black[PLA Basic].stl
10920 C:\Users\Glenn\OneDrive\Pictures\test -L 2 -C 3 new-bambu-in-stock-all-true 6-19-24.json -w 100 -cW 0.42 -l 5 -f 0.24 -b 0.1 -Z false -Y \layer-Blue[PLA Basic].stl
11316 C:\Users\Glenn\OneDrive\Pictures\test -L 2 -C 3 new-bambu-in-stock-all-true 6-19-24.json -w 100 -cW 0.42 -l 5 -f 0.24 -b 0.1 -Z false -Y \layer-Purple[PLA Basic].stl
14004 C:\Users\Glenn\OneDrive\Pictures\test -L 2 -C 3 new-bambu-in-stock-all-true 6-19-24.json -w 100 -cW 0.42 -l 5 -f 0.24 -b 0.1 -Z false -Y \layer-Silver[PLA Basic].stl
14808 C:\Users\Glenn\OneDrive\Pictures\test -L 2 -C 3 new-bambu-in-stock-all-true 6-19-24.json -w 100 -cW 0.42 -l 5 -f 0.24 -b 0.1 -Z false -Y \layer-Magenta[PLA Basic].stl
26844 C:\Users\Glenn\OneDrive\Pictures\test -L 2 -C 3 new-bambu-in-stock-all-true 6-19-24.json -w 100 -cW 0.42 -l 5 -f 0.24 -b 0.1 -Z false -Y \layer-Grass Green[PLA Matte].stl
28992 C:\Users\Glenn\OneDrive\Pictures\test -L 2 -C 3 new-bambu-in-stock-all-true 6-19-24.json -w 100 -cW 0.42 -l 5 -f 0.24 -b 0.1 -Z false -Y \layer-Cyan[PLA Basic].stl
32376 C:\Users\Glenn\OneDrive\Pictures\test -L 2 -C 3 new-bambu-in-stock-all-true 6-19-24.json -w 100 -cW 0.42 -l 5 -f 0.24 -b 0.1 -Z false -Y \layer-Orange[PLA Basic].stl
32832 C:\Users\Glenn\OneDrive\Pictures\test -L 2 -C 3 new-bambu-in-stock-all-true 6-19-24.json -w 100 -cW 0.42 -l 5 -f 0.24 -b 0.1 -Z false -Y \layer-Brown[PLA Basic].stl
64788 C:\Users\Glenn\OneDrive\Pictures\test -L 2 -C 3 new-bambu-in-stock-all-true 6-19-24.json -w 100 -cW 0.42 -l 5 -f 0.24 -b 0.1 -Z false -Y \layer-Beige[PLA Basic].stl
65376 C:\Users\Glenn\OneDrive\Pictures\test -L 2 -C 3 new-bambu-in-stock-all-true 6-19-24.json -w 100 -cW 0.42 -l 5 -f 0.24 -b 0.1 -Z false -Y \layer-Yellow[PLA Basic].stl
67452 C:\Users\Glenn\OneDrive\Pictures\test -L 2 -C 3 new-bambu-in-stock-all-true 6-19-24.json -w 100 -cW 0.42 -l 5 -f 0.24 -b 0.1 -Z false -Y \layer-Gold[PLA Basic].stl
72384 C:\Users\Glenn\OneDrive\Pictures\test -L 2 -C 3 new-bambu-in-stock-all-true 6-19-24.json -w 100 -cW 0.42 -l 5 -f 0.24 -b 0.1 -Z false -Y \layer-Bambu Green[PLA Basic].stl
82860 C:\Users\Glenn\OneDrive\Pictures\test -L 2 -C 3 new-bambu-in-stock-all-true 6-19-24.json -w 100 -cW 0.42 -l 5 -f 0.24 -b 0.1 -Z false -Y \layer-Gray[PLA Basic].stl
87420 C:\Users\Glenn\OneDrive\Pictures\test -L 2 -C 3 new-bambu-in-stock-all-true 6-19-24.json -w 100 -cW 0.42 -l 5 -f 0.24 -b 0.1 -Z false -Y \layer-Mistletoe Green[PLA Basic].stl
89268 C:\Users\Glenn\OneDrive\Pictures\test -L 2 -C 3 new-bambu-in-stock-all-true 6-19-24.json -w 100 -cW 0.42 -l 5 -f 0.24 -b 0.1 -Z false -Y \layer-Sakura Pink[PLA Matte].stl
101340 C:\Users\Glenn\OneDrive\Pictures\test -L 2 -C 3 new-bambu-in-stock-all-true 6-19-24.json -w 100 -cW 0.42 -l 5 -f 0.24 -b 0.1 -Z false -Y \layer-Ice Blue[PLA Matte].stl
228084 C:\Users\Glenn\OneDrive\Pictures\test -L 2 -C 3 new-bambu-in-stock-all-true 6-19-24.json -w 100 -cW 0.42 -l 5 -f 0.24 -b 0.1 -Z false -Y \layer-White[PLA Basic].stl
Press any key to continue . . .
```

Taking the top 7 and adding Red:

```
java -Xmx24432m -jar PIXEstL.jar -p "D:\Glenn\Downloads\PIXEstL-0.3.0\test img 2.json" -w 100 -cW 0.42 -l 7 -f 0.24 -b 0.1 -Z false -Y -i "C:\Users\
```

Glenn\OneDrive\Pictures\test.jpg"

Palette generation... (4853 colors found)

Calculating color distances with the image...

Nb color used=2311

Generating previews...

Generating STL files...

Layer[0.0] :Mistletoe Green[PLA Basic], Gray[PLA Basic], Bambu Green[PLA Basic], Red[PLA Basic], Ice Blue[PLA Matte], Gold[PLA Basic], Sakura Pink[PLA Matte], White[PLA Basic]

GENERATION COMPLETE ! (17913 ms)


```
C:\WINDOWS\system32\cmd. x + v
Make terminal wide
Press any key to continue . . .
88856 C:\Users\Glenn\OneDrive\Pictures\test test img 2.json -w 100 -cW 0.42 -l 7 -f 0.24 -b 0.1 -Z false -Y\layer-Mistletoe Green[PLA Basic].stl
98276 C:\Users\Glenn\OneDrive\Pictures\test test img 2.json -w 100 -cW 0.42 -l 7 -f 0.24 -b 0.1 -Z false -Y\layer-Red[PLA Basic].stl
98672 C:\Users\Glenn\OneDrive\Pictures\test test img 2.json -w 100 -cW 0.42 -l 7 -f 0.24 -b 0.1 -Z false -Y\layer-Sakura Pink[PLA Matte].stl
113580 C:\Users\Glenn\OneDrive\Pictures\test test img 2.json -w 100 -cW 0.42 -l 7 -f 0.24 -b 0.1 -Z false -Y\layer-Ice Blue[PLA Matte].stl
114216 C:\Users\Glenn\OneDrive\Pictures\test test img 2.json -w 100 -cW 0.42 -l 7 -f 0.24 -b 0.1 -Z false -Y\layer-Gray[PLA Basic].stl
133272 C:\Users\Glenn\OneDrive\Pictures\test test img 2.json -w 100 -cW 0.42 -l 7 -f 0.24 -b 0.1 -Z false -Y\layer-Bambu Green[PLA Basic].stl
133632 C:\Users\Glenn\OneDrive\Pictures\test test img 2.json -w 100 -cW 0.42 -l 7 -f 0.24 -b 0.1 -Z false -Y\layer-Gold[PLA Basic].stl
212148 C:\Users\Glenn\OneDrive\Pictures\test test img 2.json -w 100 -cW 0.42 -l 7 -f 0.24 -b 0.1 -Z false -Y\layer-White[PLA Basic].stl
Press any key to continue . . . |
```

Color Preview:

