



SUISG

**Simple User Input
Sculpture Generation**



Coleman Ellis, Claire Kincaid, Maximillian Schommer



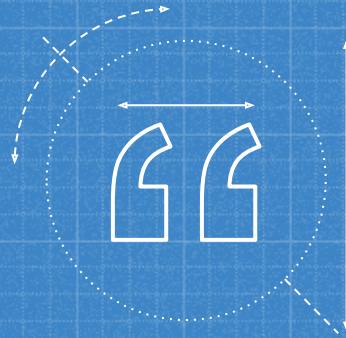


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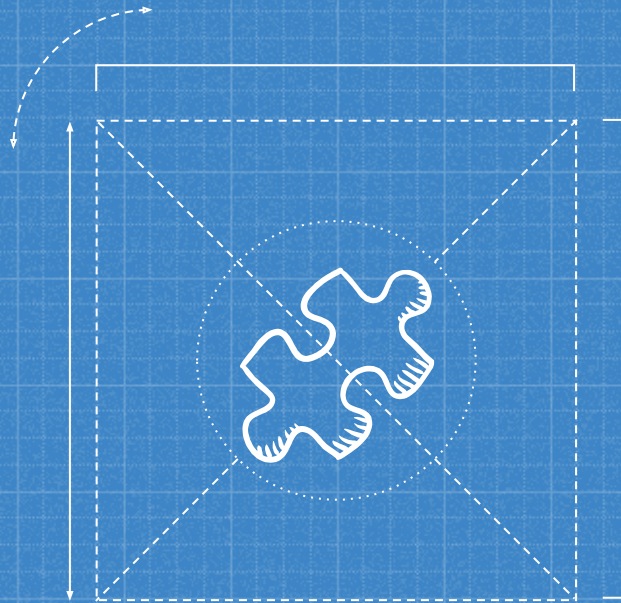
WHAT SUI SG IS

And why it's awesome





**It's a terrible acronym but it's
really fun to say
--Coleman Ellis**



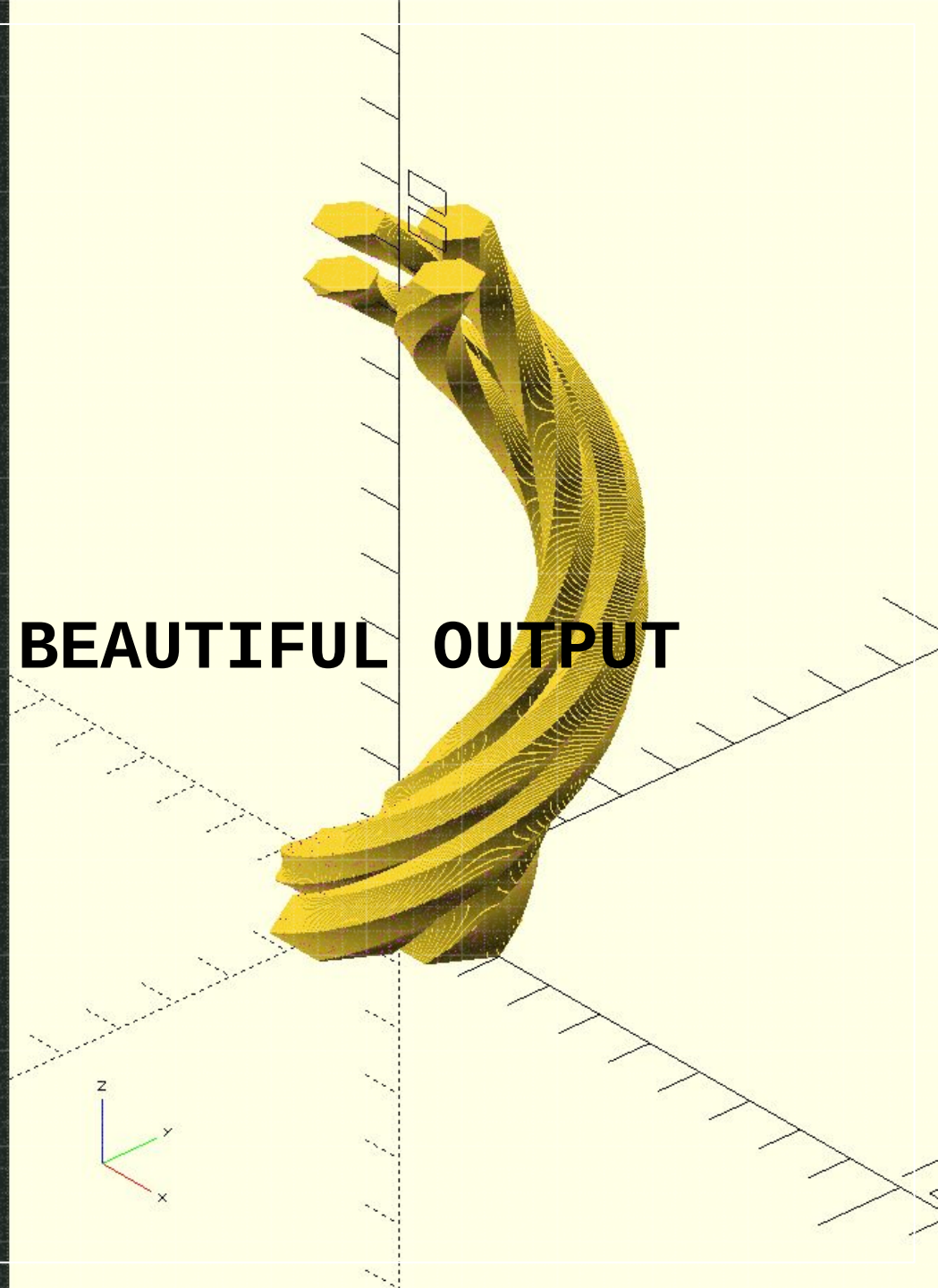
**BUT WHAT IS IT
ACTUALLY?**


```

1 from Geometry import *
2
3 hex1 = n_Sided_Polygon(6,10,(10,0))
4 hex2 = n_Sided_Polygon(6,10,(0,10))
5 hex3 = n_Sided_Polygon(6,10,(-10,0))
6 hex4 = n_Sided_Polygon(6,10,(0,-10))
7
8 rot1 = Rotation(120, None)
9 rot2 = Rotation(360, (9,9))
10 dil1 = Dilation(.5)
11 dil2 = Inward_Harmonic_Dilation(0.5,(0,0))
12
13 transformations = [rot1,rot2,dil1,dil2]
14
15 anim = Animation(hex1,transformations)
16 anim.add_shape(hex2,transformations)
17 anim.add_shape(hex3,transformations)
18 anim.add_shape(hex4,transformations)
19
20 anim.write_to_scad()

```

SIMPLE INPUT BEAUTIFUL OUTPUT



HOW IT WORKS...

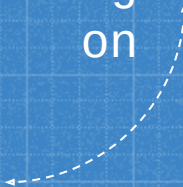
- User inputs some values, checks some boxes, presses some buttons, and fiddles with sliders
- Program generates a sculpture from vector animations, perlin noise, or mathematical functions
- Program exports sculpture as an STL

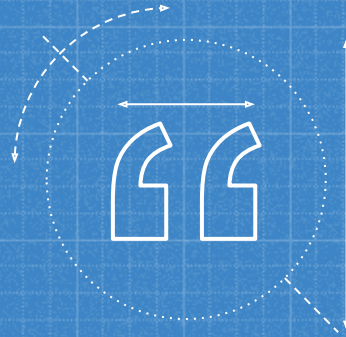


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WHERE SUI SG IS

What we've accomplished
and what we're working
on

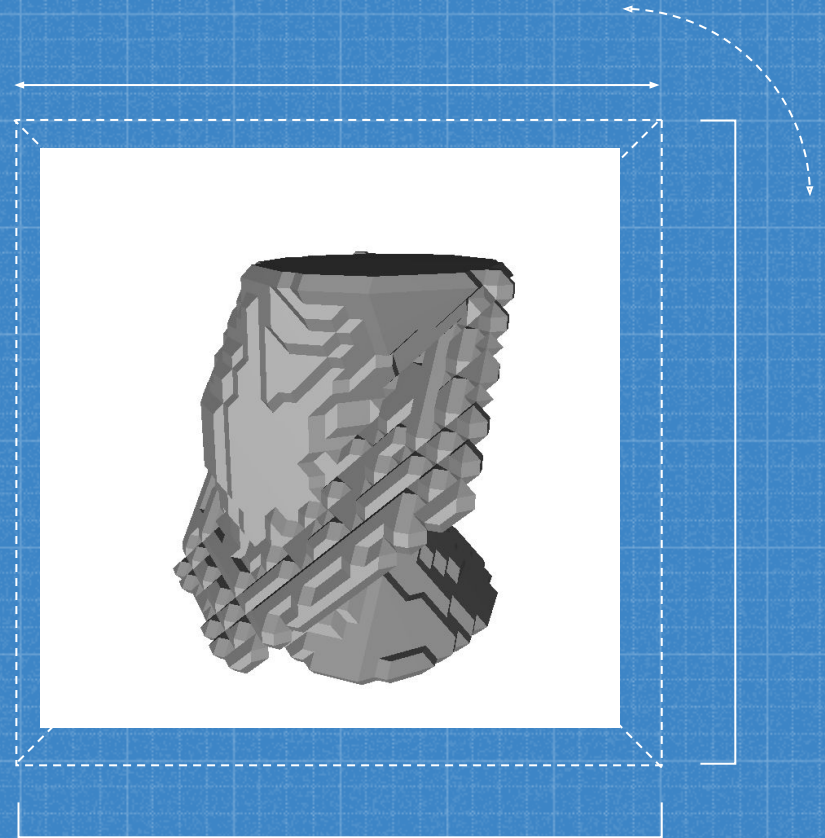




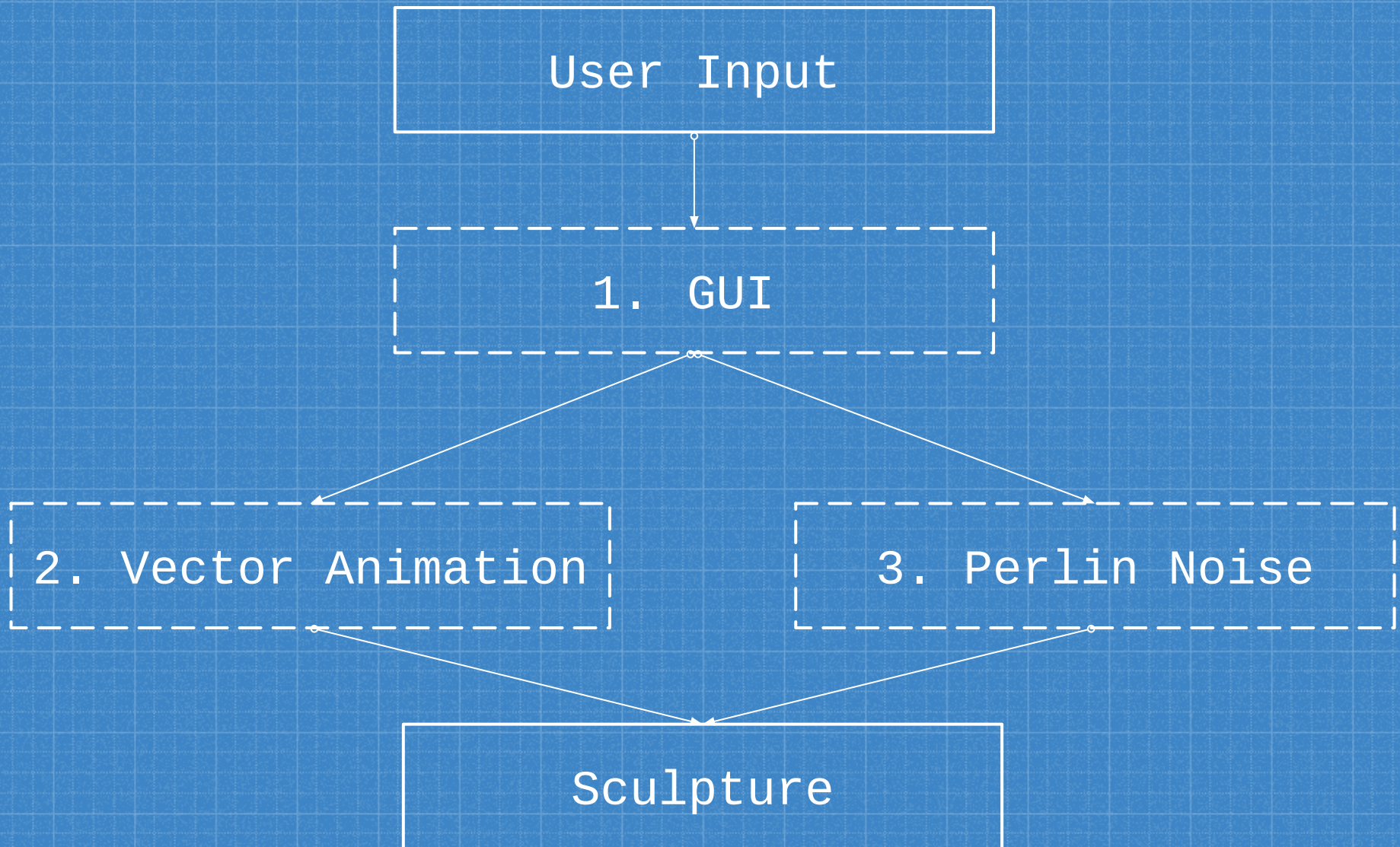
This code is just absolute trash
--Maximilian Schommer

BUT IT WORKS... Mostly

Right now, we have operational sculpture generating code using vector animations and perlin noise, but only vector animation sculptures are printable.



SUISG'S THREE PARTS



A CLOSER LOOK

GUI

LIBRARIES

- pyGTK

CLASSES

- Button
- Window
- Checkbox
- SlideBar
- gtkBox

IMPLEMENTATION

Classes connect
to methods
which run back
end functions

A CLOSER LOOK

Vector Animation

LIBRARIES

- NumPy
- CV2

CLASSES

- Polygons
- Transformations
- Animation

IMPLEMENTATION

Animations associate
Polygons with
Transformations, render
the Animation through
time, then export volume
data or an openSCAD file

A CLOSER LOOK

Perlin
Noise

LIBRARIES

- Time
- Pickle
- Os
- Skimage
- Noise
- Numpy
- Cv2
- Pyglet
- Myavi
- Traits.api
- Textblob

CLASSES

- Sculpture
- Visualization

IMPLEMENTATION

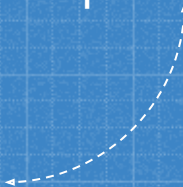
Sculpture
contains
methods that
execute on
volume data,
and
visualization
is supplied by
Visualization
class

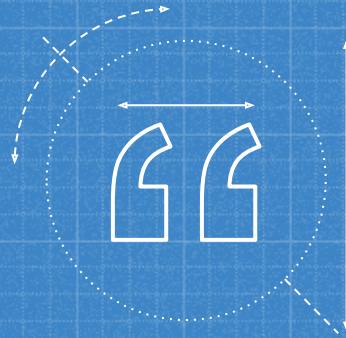


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WHERE SUI SG IS HEADING

What we'll show off at
Expo





**It will work I swear we just can't
show it to you right now
--Claire Kincaid**

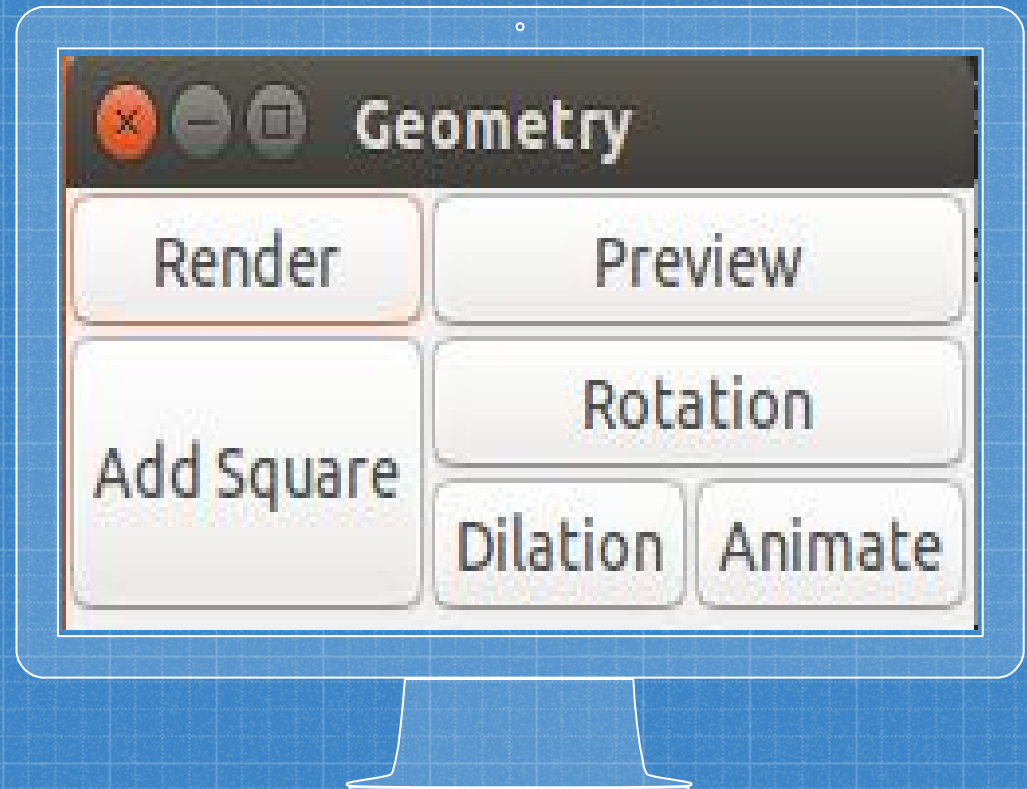
THE GUI

RIGHT NOW:

- Buttons
- Check boxes
- Slidy bars
- User input value

GOALS:

- Realtime Preview
- Nested Menus
- Draw Function



SCULPTURE GENERATION

- Sculpture generation from mathematical functions
- Combine sculpture generation techniques via volume data
- General cleanup and optimization

Thanks!

ANY QUESTIONS?

CREDITS

Presentation Content

- Text By Coleman Ellis, Claire Kincaid, Max Schommer
- Code By Coleman Ellis, Claire Kincaid, Max Schommer
- Photographs by Coleman Ellis, Claire Kincaid, Max Schommer

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- Presentation template by SlidesCarnival
- Photographs by Unsplash