Pixel Art Scenes

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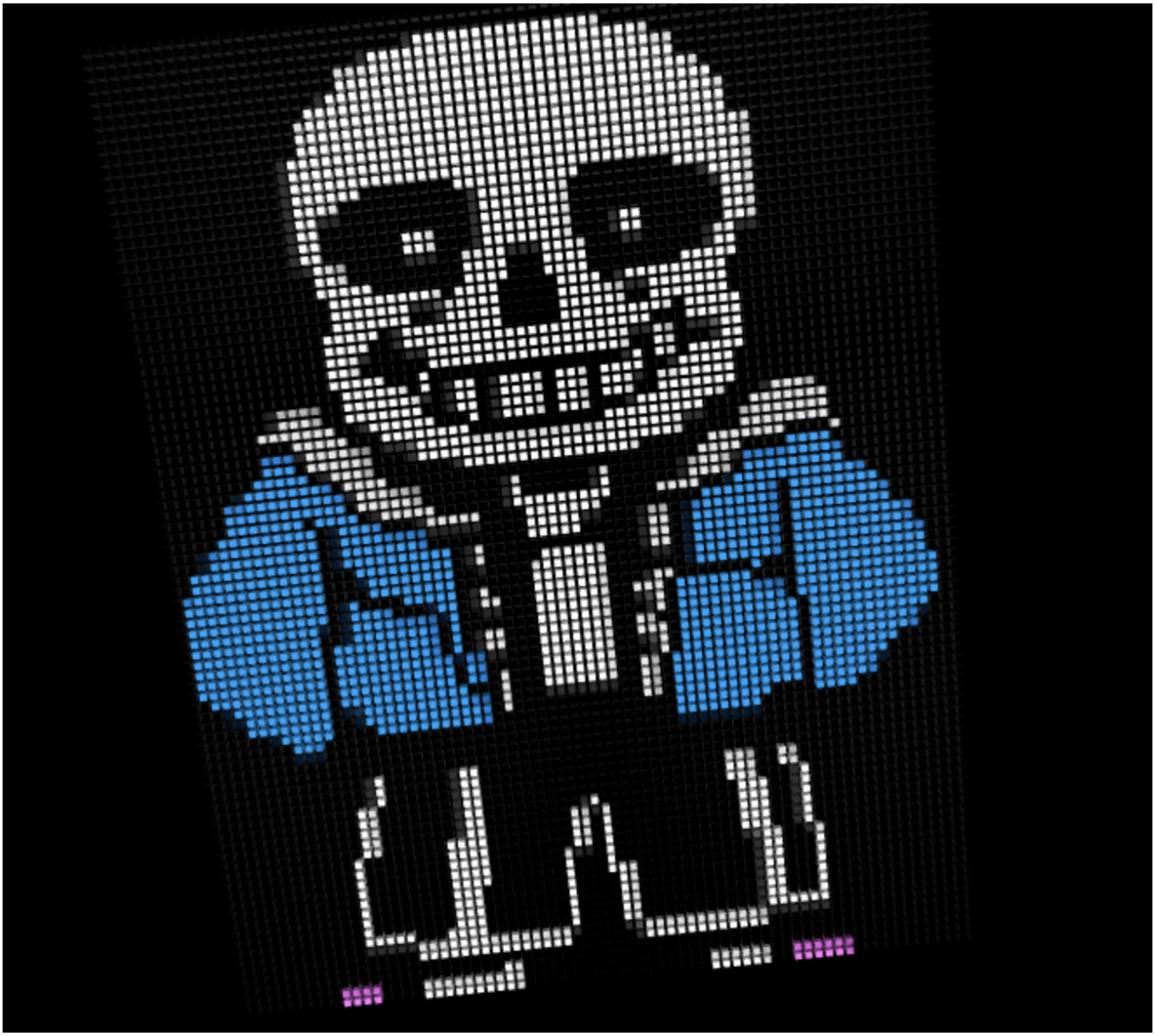

Figure 1: It looks like you're going to have a bad time (sans)

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ABSTRACT

My project takes an image file and converts it into XTK cube pixel art. It uses the properties of the image to recreate its dimensions and color with XTK cubes

KEYWORDS

XTK, Pixel Art

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1 INTRODUCTION

This project is a cool example of how to you can render images in different ways using computer graphics knowledge. Rendering and downsampling an image is cool and the results are tangible.

2 RELATED WORK

XTK [1] OpenCV [**?**].

3 METHOD

My project uses OpenCV to pull the properties from an image like the dimensions and colors of each pixel. Then it iterates through pixel by pixel in blocks of 25 and averages their RGB values into one cube to downsample so larger images can be processed. Eventually every block of 25 pixels will be rendered as cubes and a 2D pixel art rendition of the image will appear on the screen. The values are all variables so if you need to adjust the downsampling values or anything else it is the simple change of a variable

3.1 Implementation

OpenCV came with a user interface that allows you to click a button and prompts you to choose an image from your computer and then render it. My code does the work to render it again as a 2D Pixel Art out of XTK cubes

```
avgr /= dsp * dsp;
      avgg /= dsp * dsp;
      avgb /= dsp * dsp;
      cube = new X.cube();
    cube.center = [row * (pd/dsp), col * (pd/dsp), depth * (pd/dsp)];
     cube.color = [avgr / 255, avgg / 255, avgb / 255];
      r.add(cube);
```

3.2 Milestones

3.2.1 Milestone 1. I looked for ways to render an image and pull the image properties

3.2.2 Milestone 2. The original thought is to just render a cube for every single pixel, but it is quickly found that the program will stall as most images are too large to render pixel by pixel

3.2.3 Milestone 3. Downsampling by averaging the rgb values of pixels in groups of 25 was the solution, which allows us to render bigger images. The value 25 is a variable that can be changed if you want to render bigger or smaller images

4 RESULTS

Finally a program that renders an image as pixel art with XTK cubes is the result. It is a cool little program that makes for some neat renders.

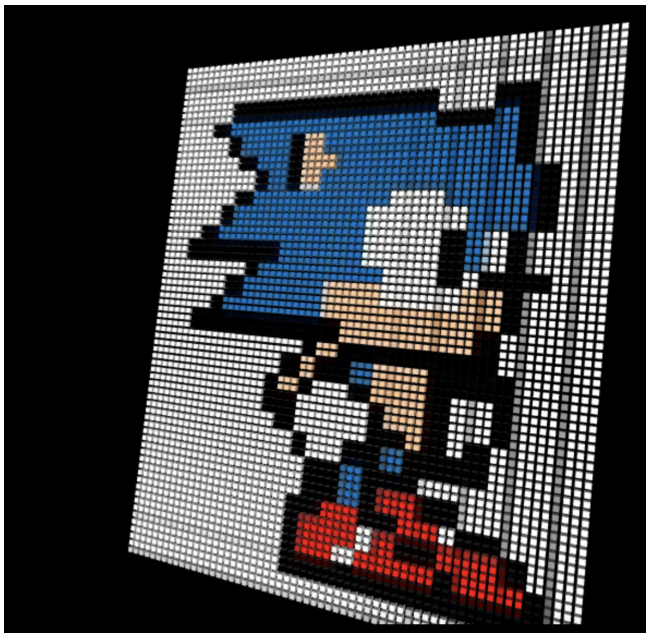

Figure 2: Sonic the Hedgehog.

5 CONCLUSIONS

Ultimately this was a fun project to do that takes the computer graphics namesake literally. There were some challenges but finding solutions was rewarding especially because there is a tangible result from the code that you get to see and enjoy.

REFERENCES

[1] Daniel Haehn, Nicolas Rannou, Banu Ahtam, P. Ellen Grant, and Rudolph Pienaar. 2012. Neuroimaging in the Browser using the X Toolkit. *Frontiers in Neuroinformatics* (2012).