DS-450 – **Man-made or AI?**

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Executive Summary

I’ve been an artist my whole life. From the second I was able to hold a crayon, I’ve been creating art. Over the past few years in particular, art created by Artificial Intelligence has been on the rise, and there have been very mixed opinions on it. Many question whether AI art will put artists out of jobs. I, myself, wonder if this will sooner or later be the case. This is not to say that I think AI art is necessarily a bad thing, however I do believe that human-made art is more valuable, considering all the effort that is put into creating art from scratch.

What I intend to do in this project is create a system that can determine whether an inputted image was created by AI, or a real-life artist by training the system to distinguish between various characteristics such as geometry, shadows, reflections, and more. In many AI art pieces, there tend to be some slight “glitches,” so I’m hoping the system will pick up on those to distinguish between real and synthesized art.

Project Idea

The general idea of this project is to build a system that recognizes image content. This can be helpful in many areas, not just when it comes to distinguishing between AI art and man-made art. Image recognition, in general, is great for developing and testing machine learning approaches. “Vision is debatably our most powerful sense and comes naturally to us humans.”[[1]](#footnote-1) Although it’s seemingly easy for humans to do, it’s much harder for a computer to do. The goal of my project is to make the computer do the work for me, determining whether a piece of art is synthetic or not.

Background

The “problem” that I am trying to solve in this project is distinguishing between AI art and man-made art. The solution to this is not an easy one, however I think it’s achievable. My goal is to build a system that is able to recognize various features in an image in order to solve this “problem.” The data that I am going to use will come from both AI-generated art pieces and art pieces created by real-life artists. I’m even planning on using a piece or two of my own.

Preliminary Architecture

Firstly, I plan on storing my data as either .png or .jpg files. I aim to input various images into my model by providing it with numbers. Each pixel in an image is defined by three floating point numbers representing the blue, green and red values for every pixel. I will start by defining a model and providing initial values for its parameters. From there, I will feed both the AI image and the man-made image to the model, including their known and accurate labels. This way, I can train the model to decipher between real and synthetic. During this stage of the process, the model will refer to the training data to change the values of its parameters repeatedly. The main goal of this type of supervised learning is to find parameter values that result in as many correct output values as possible. Once the training is finished, the model’s parameter values will no longer change, and the model can be used for various images that are inputted.

Modeling

I intend to use TensorFlow as my main model in order to predict whether different pieces of art are AI or not. TensorFlow combines Machine Learning and Deep Learning models and algorithms. “TensorFlow allows developers to create a graph of computations to perform. Each node in the graph represents a mathematical operation, and each connection represents data.”[[2]](#footnote-2) The reason I am choosing to work with TensorFlow is because it excels in image recognition.

Conclusion

Overall, I’m excited to work with this data. Art has always been a passion of mine, so I’m happy I get to implement it into this project. I’m intrigued to see if and how the computer will distinguish between the two types of art pieces. I plan on training the model to predict whether the art is real or synthetic by using TensorFlow. I’m hoping that by training the model for this image recognition, and with a lot of trial and error, I can create a system that will easily decipher between these two art forms.

References

*How to Build a Simple Image Recognition System with TensorFlow*, Wolfgang Beyer, January 2, 2017,<https://www.freecodecamp.org/news/how-to-build-a-simple-image-recognition-system-with-tensorflow-part-1-d6a775ef75d/>

*What is TensorFlow? Installation, Basics, and more*, Marina Chatterjee, January 10, 2023,<https://www.mygreatlearning.com/blog/what-is-tensorflow-machine-learning-library-explained/>

1. # *How to Build a Simple Image Recognition System with TensorFlow*, Wolfgang Beyer, January 2, 2017, <https://www.freecodecamp.org/news/how-to-build-a-simple-image-recognition-system-with-tensorflow-part-1-d6a775ef75d/>

   [↑](#footnote-ref-1)
2. # *What is TensorFlow? Installation, Basics, and more*, Marina Chatterjee, January 10, 2023, <https://www.mygreatlearning.com/blog/what-is-tensorflow-machine-learning-library-explained/>

   [↑](#footnote-ref-2)