UTAH STATE UNIVERSITY

An Algorithm for Identifying Content and Style of Musical Compositions

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PROJECT PRE-PROPOSAL

Introduction

This project aims to discover if algorithms developed to classify visual media or create visual art can easily be modified to work with audio data instead of images. I will be comparing popular image recognition techniques with existing audio classification algorithms and adapting suitable image classification algorithms to attempt recognizing different musical elements.

In particular, I'd like to investigate whether or not an algorithm similar to the one presented in *A Neural Algorithm of Artistic Style* could be adapted to work with music instead of images. That paper showed that in artistic images, content and style were separable parameters when viewed from an algorithmic perspective. If the same held true for musical data then it may be possible to create algorithms that only identify musical style or genre independent of the actual notes or instruments involved.

Resources

- **Musical Data:** Sample MP3 files are quite easy to locate, and I have a personal collection of a few thousand songs. This data will be used as the input to my algorithms.
- **Musical Experts:** I have some formal training in music theory, and I know a few of the music professors on campus at USU. Having an expert on hand will allow me to readily determine if my algorithm is working, and identify possible problems with the classification.
- **Research:** *A Neural Algorithm of Artistic Style* is the primary work I'll be referencing, with other papers of image classification sourced as needed. This will provide a starting point for the algorithm that already works for image data.
- **Software Implementations:** https://github.com/jcjohnson/neural-style is a publicly-licensed implementation of the above algorithm in the Lua language. I am familiar with Lua, so it should be simple to immediately begin working with the algorithm or porting it to a more powerful language.