Digital Dating: Predicting Possible Time of Creation of Art Based on Style and Civilization

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Summary of the Proposal

Dating pieces of art has been around for quite a good while and allow us to roughly know where and when a piece of art originated to gain insight into ancient cultures. The most common techniques involve the usage of carbon dating, dendrochronology, and thermoluminescence among others. Some pieces of art, however, are not able to be dated this way, or in any other way; as such, they remain undated and it can only be guessed in what time period that specific art/object was made in. To circumvent this, we propose to use machine learning to tackle this problem of not being able to date certain things and try to predict the possible time of creation of the art.

Background

Many methods are used to date art such as:

- carbon dating
- microscopic analysis
- infrared reflectography
- thermoluminescence
- dendrochronology

However, when these methods fail, some historians rely on estimations such as style and comparison to other art.

To date art based on the style, it takes a trained eye and, even then, we risk wrong timeline estimation. To at least bypass training a person, we hope to train a machine learning model to estimate a set of years of possible creation given a piece of art.

Currently, we have contacted the Carlos Museum, an art history museum part of Emory University, for a summary of their collection including:

- images
- collection the art is a part of
- year(s) of creation
- medium
- dimensions

Based on our research, we couldn't find any application of ML to date art. Admittedly, it could be due to the possibility of instability of using the style of art to date it, however, this application could still prove to be useful to estimate dates and verify it using other techniques.

Goal and Objectives

The main goal of this research is to be able to accurately predict the time period of an undated piece of art. We intend on doing this by using obtained data that has an image of an art piece, along with the date and civilization it was placed in. With this data, we can then begin training the machine with the set of known pieces that have been accurately dated to accurately predict the date of undated pieces of art.

Data and Methods

The data we will be using is provided directly by the Carlos Museum, which has more than 2000 pieces of art that includes both dated and undated artifacts. The data itself, as previously stated, will have images, along with the collection the art was placed in, the date, medium, and dimensions of the art.

The piece of data that will probably prove to be the most troublesome is the images, as each will probably vary in size. As at the time of writing the proposal, we haven't received the data from our source, we cannot verify this, but as needed we will crop the images to a set size assuming we cannot determine a way to allow varying size data. The set size will probably bigger than the biggest image (or shrunk down if it is large to reduce processing time).

References

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