

Art Create Project Proposal

1. Organization:

The Graham Gund Gallery is a 31,000 square-foot space located on Middle Path, in the heart of the Kenyon College's campus, and named for alumnus Graham Gund '63, a noted architect, philanthropist, and collector. The Gund Gallery plays a major part in a larger campus initiative to expand access to art and visual culture for the College's student body, faculty, and staff along with the surrounding community. Its main mission is to stimulate original inquiry and individual exploration motivated through engagement with the best art and artists of the 20th and 21st centuries. Moreover, the Gund's staff and board of directors seeks to enhance the College's liberal arts curriculum through provocative exhibitions and the collaborative educational opportunities and cultural conversations they enable.

2. Client Background:

Our team met with the primary partner, Dr. Jodi Kovach, Curator of Academic Programs at the Gund Gallery on Feb. 7th. Dr. Jodi has 15 years experience in both curation and display, and art teaching. Our team got to know the ideas and requirements that our partner would want to find in our final product. Dr. Jodi Kovach proposed a vision that our final program will allow users to search for artworks with very specific categorization terms and create a composite image out of the search image. The user may also click on different aspects of the composite image and it takes the viewer back to the original piece that the aspects originated from. Overall, Dr. Jodi wants our project to create a new dialogic and expansive way for the users to interact with the database.

3. An overview of the goals of the project:

We will use genetic algorithms that take Gund Gallery artworks as inspiration to create new art. The program will allow users to search for artworks with very specific categorization terms, which are then fed into the machine learning algorithm, creating a new piece of artwork out of the search images. The user will then be able to see what pieces of art "inspired" the machine learning algorithm to create the new piece of art. In order to be user friendly, we will develop a user interface that allows users to easily utilize the genetic algorithm to create art from their search terms. Users will be able to use a suggested similar images function that takes the viewer to similar pieces in the Gund Gallery, as well as tools for the user to dive deeper into the art like a magnification tool. Later in the semester, we will work with the other art team and incorporate their search algorithm to categorize artworks that allow users for this genetic algorithm to be able to easily amalgamate artworks in similar categories for machine learning art creation.

Overarching goal: A new dialogic and expansive way for the users to interact with the database.

4. A description of major functions and important project attributes:

The major functions can be described as following 6 steps:

- 1) Attach hashtags of different search terms to artwork in Gund Gallery.
- 2) Take in a search term chosen by the user among the hashtags that have been attached to the pieces in the Gund Gallery.
- 3) Gathering images based on a certain term from WikiArt.org for training
- 4) Use images gathered to train the Discriminator to distinguish fake and real art images in the genre of the search term.
- 5) Use a generator algorithm to create new artworks based on artworks tagged with the search term from the Gund Gallery database.
- 6) Mutate the created artworks through a genetic algorithm & run the images from each generation through the discriminator to check until the created artwork cannot be discriminated from real artworks related to the specified search term(s) by the discriminator.
- 7) Present the composite Image & Link the composite image to the original images in a UI that allows the user to trace back.
- 8) Allow for administrators to go back to the hashtag database and update hashtags and add new art pieces.

The big project attributes are the following:

- 1) Generates an image of an acceptable quality;
- 2) An average skilled user can navigate the UI to use the algorithm;
- 3) The user can interact with artistic aspects of the composite image.

5. A description of the data being stored and processed:

This project will draw from two external databases: the WikiArts.org database for training of the Discriminator and the Gund Gallery art database for generating a composite image. It will also contain internal databases:

1. Gund Gallery Artwork Classification (artwork ID - hashtags attributed):

Artwork_ID	Hashtage_ID
ABCD	1234
ABCD	3421
DEBA	1234
...	...

2. Artwork link: Artwork ID - Link to the artwork in Gund Gallery database

Artwork_ID	GG_link
ABCD	https://....
...	...

3. Hashtag ID: Hashtag ID and the actual term linked to that hashtag

Hashtag_ID	Search_term
1234	“trees”
7631	“modernism”
...	...

4. Result database (search ID - image - hashtag ID - original image ID)

The final composite image of each search session should be stored in a result folder that stores ALL final composite images with a specific file path that can be accessed by searching the unique search ID.

Search_ID	Composite_file_link	Hashtag_ID	Original_image_ID
02122022_001	C:/.../02122022_001. jpeg	1234	“ABCD”, “EFGD”,... (n IDs)
02122022_002	C:/.../02122022_002. jpeg	3421	...
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