**The Art in Our Worlds**

**By**

**Dark Matter**

# Project Summary:

The idea of our application is to grant the user the power to modify the gathered images from NASA as they see fit and then share their accomplished masterpiece with the world.

# Features:

1. Straightforward and user-friendly GUI (Graphical User Interface)
2. Various options to tweak, enhance, modify, beautify the original Image from NASA
3. Exceptional image generation via NST (Neural Style Transfer) of the NASA image in the style of an image provided by the user
4. Optimized image search solution with the help of NLP (Natural Language Processing) and CLIP (Contrastive Language-Image Pre-training)
5. Options to share your masterpiece with the world on your favorite social media apps
6. Availability in English and French languages

# Execution:

1. The UI will be programmed using Flask (python framework), Javascript(ReactJs), HTML and CSS to give a lively and interactive experience to the user
2. The options to tweak and beautify the image will be programmed using python and image processing libraries, namely OpenCV and Pillow, which are out of the box open source tools
3. The NST is programed in python with the help of open source libraries namely tensorflow, matplotlib, scipy and numpy. The NST algorithm uses the convolution neural networks technique to drastically reduce the number of parameters in the neural network, hence reducing the training and image generation time. The shallower layers of a ConvNet tend to detect lower-level features such as edges and simple textures. The deeper layers tend to detect higher-level features such as more complex textures and object classes
4. The idea behind CLIP is to take an Image and predict the text from this image. Simply by pushing the unrelated features away from the dimensional space, and pushing the similar feature together (we can think of it like k-nearest-neighborhood)
5. To be able to share the final image with the world we are using an open source module called Shareon that is used in the HTML script
6. For the application to work in multiple languages the CLIP module takes care of this by labeling the pictures in the corresponding languages

# Equipment:

All we need for the completion of this project is a decent laptop and a stable internet connection.

# Future Works:

1. New feature to generate Images related to earth and space from user text by using NLP through the GAN (Generative Adversarial Networks) algorithm
2. Short story generation based on the generated images
3. Support for more languages
4. Make our own labeled data-set to make it a lot more efficient to search and display images