

# Artificial Intelligence Interim Progress Report

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## Introduction

There is always a situation that we need some unique icons, images, pictures, or figures, like design some logo, need some icons for making a uniform, create the poster, or make some decorations. If you have excellent art talent, you can finish by yourself, but what if you don't? Like me, I have encountered these problems innumerable times, but I still want to design something beautiful and commemorative.

Thus, we came up with a question: "Can AI creates artistic figures according to our demand?" We have partitioned this question into several parts. The first one, and also the most explicit one, is how to create the figures? And the second one is how to define an artistic figure? Or how to define beautiful? And the last one is that if we can create an image, how does it generate the figure "according to our demand"? And how to give the requirements to AI? These questions are the progress that we must solve in the following days.

## Methodology

We haven't decided the methods we will apply, but we have several possible ways to consider. The methods we might use to solve the first problem, which is how AI creates the figures, are something like GAN, or use CNN to generate the images, but these are just some rough approaches. We will brainstorm the details later. The way to do better than previous works might be to design our loss function in our network, or without losing the quality of our generated images, try to broaden the choices and diversities.

Then, I think the methods we might use in the second question are the most challenging task. Since art is a subjective thing, so it's hard to define which is more beautiful or what kind of figure is an artistic one. However, it occurs to us that we can use several different recognition models to grade and vote for our images. In those models, some can be training to recognize the classical style of painting, others are learning to know what is an ugly picture, and the others will like modern art. By the above points, if a figure is acceptable for all the models above, we can say that it is a beautiful enough image. We are forward to using this method and see how it works.

Also, we can design a forum for our classmates in NYCU, let them experience our result, and give us a rate!

## Progress

We have discussed the most impressive topic for all the members of our team. Also, we have listed some possible approaches, which are in the methodology part. We also grasp some information for our project, for example, the paper about the representative model or the ideas and methods for generating images.

## Remaining milestones

The most urgent part we need is the training data, so finding the data is most imperative. Also, we should finish the coding of our project models. Last but not least, we think we can analyze the effectiveness and try to optimize the results.

## References

- [1] [https://openaccess.thecvf.com/content\\_cvpr\\_2016/papers/Gatys\\_Image\\_Style\\_Transfer\\_CVPR\\_2016\\_paper.pdf](https://openaccess.thecvf.com/content_cvpr_2016/papers/Gatys_Image_Style_Transfer_CVPR_2016_paper.pdf)
- [2] <http://www.twistedwg.com/2018/07/04/StarGAN-VC.html>
- [3] Hirokazu Kameoka, Takuhiro Kaneko, Kou Tanaka, Nobukatsu Hojo(2018). StarGAN-VC: Non-parallel many-to-many voice conversion with star generative adversarial networks. cs.SD. arXiv:1806.02169
- [4] Yunjey Choi, Minje Choi, Munyoung Kim, Jung-Woo Ha, Sunghun Kim, Jaegul hoo1(2014).Generative Adversarial Networks. [http://openaccess.thecvf.com/content\\_cvpr\\_2018/papers/Choi\\_StarGAN\\_Unified\\_Generative\\_CVPR\\_2018\\_paper.pdf](http://openaccess.thecvf.com/content_cvpr_2018/papers/Choi_StarGAN_Unified_Generative_CVPR_2018_paper.pdf)
- [5] Ian J. Goodfellow, Jean Pouget-Abadie, Mehdi Mirza, Bing Xu, David Warde-Farley, Sherjil Ozair, Aaron Courville, Yoshua Bengio(2014). Generative Adversarial Networks. stat.ML. arXiv:1406.2661v1.
- [6] <https://cs231n.github.io/convolutional-networks/>