# Project Proposal, CS 534, Fall 2018

**Group Members:**
- Rui Yin ryin5@wisc.edu
- Dong Fang dfang24@wisc.edu
- Xiangcheng Shen xshen56@wisc.edu
- Messi Tu ctu5@wisc.edu

**Project Statement:**
- Our project is focusing on Image Style Transfer, which is a topic given on the list.
- We will re-implement the idea of Image Style Transfer proposed by Leon A. Gatys, Alexander S. Ecker and Matthias Bethge, especially the Neural Algorithm of Artistic style introduced in their paper.
- Image processing is one of the techniques that uses image as a representations to depict convolutional neural networks for object recognition, and it helps to make higher level image become more explicit. In our project, we will implement a Neural Algorithm of Artistic style that would process the image by separating and recombine them to from different style of natural images. It allows us to produce image with perceptual quality, combining a photograph with multiple well-known artworks. For example, we will try to combine daily photos with Pablo Picasso's paintings to create different styles and make these photos artsy.
- Why do we want to solve it? It looks fun. Image processing is very important in both daily uses and academic studies, and it has great potential in academic area. Image Style Transfer has already been adopted with tensorflow, and is still evolving with new algorithms.

**Steps Involved:**
1. We will use convolutional neural network (CNN) to extract content and style in different images.
2. We will use A Neural Algorithm of Artistic Style to separate and recombine the image content and style of natural images.
3. The extracted style or feature will be combined into the target image.
4. A image with the chosen style will be created.

**Time Table**

| | |
|---|---|
| Oct 10 | read papers and write codes about the content loss and style loss |
| Oct 25 | implement CNN |
| Oct 31 | midterm report |
| Nov 15 | debug + try to implement it on .gif as well |

| | |
|---|---|
| Nov 30 | better interface + retraining |
| Dec 3-12 | final presentation |
| Dec 3-12 | project web page |

**Reference:**

Gatys, L. A., Ecker, A. S., & Bethge, M. (2016). Image Style Transfer Using Convolutional Neural Networks. *2016 IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*. doi:10.1109/cvpr.2016.265

Artistic Style Transfer with Convolutional Neural Network. (2018). Retrieved from https://medium.com/data-science-group-iitr/artistic-style-transfer-with-convolutional-neural-network-7ce2476039fd