

Proposal for Senior Honors Thesis

HONS 497 Senior Honors Thesis Credits 2 (2 minimum required)

Directions: Please return signed proposal to the Honors Office at least one week prior to your scheduled meeting with the

Student's Name: Solomon Kim

Primary Advisor: Dr. Rodney Summerscales

Secondary Advisor:

I plan to use Generative Adversarial Networks (GAN) to improve upon past research in this field. In order to use a GAN we must define a couple of variables from the outset of the research. The first variable, or input that we will be giving the GAN will

be the labels or descriptions of the data that we are using. These labels will be used to train the GAN.

These labels act as a guide in a similar way that an artist uses a sketch to create a painting. The GAN will generate images out of random noise. These labels act as a guide in a similar way that an artist uses a sketch to create a painting. The GAN will generate images out of random noise.

correct answer. We keep doing this until our network can successfully recognize that the input picture given was of a cat. This process is referred to as training and is necessary for any neural network to operate. Once the network is trained, we would then give it a

have constructed our network.

realistic face, however, I am concerned with the type of face produced. This means that the dataset that I am going to be using will

distinguishing features of the face. Theoretically when my GAN is complete I will be able to give it an input of several defining emotions and features of the face and my generator network will be able to produce an image accordingly.

S. Liu, J. Yang, C. Huang and M. Yang, Multi-objective convolutional learning for face labeling, 2015 IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2015.

This paper aimed to use convolutional neural networks to label different facial features in a dataset of faces. The most accurate results were found on their HELEN dataset and ultimately could identify eyes, brows, noses, mouths, lips, and

the goal of our project is to turn the descriptions into actual images. The research is titled GAN-CLS

generator network combined with a temporal structure would produce accurate results of different text variations. Because our labels would be fairly consistent I think the most valuable finding of this research is the conclusion that a GAN-CLS network is most accurate at providing descriptive images of text. This model will provide us with a general basis for generating images from text.

Ledig C; Wang Z; Shi W. Photo-Realistic Single Image Super-Resolution Using a Generative Adversarial Network. Computer Vision and Pattern Recognition. IEEE. 2017

low-shot, augmented data allowed for higher accuracy and coverage of the network. With this stacked approach we can

bolster our training set and allow us to further train our network.

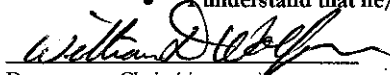
Han Zhang, Tao Xu, Hongsheng Li, Shaoting Zhang, Xiaogang Wang, Xiao lei Huang, and Dimitris Metaxas. StackedGAN++: Realistic

Image Synthesis with Stacked Generative Adversarial Networks. CVPR 2017, 3602-3611.

Similar to the other paper on StackedGANs this paper did a further study into stacking GANs. These researchers also found that by having multiple layers of GANs they were able to break the problem of image generation down into more easily controllable sub problems. The results for both conditional and unconditional image generation were quite impressive. This

Department Chair Approval

- This student's performance in his/her major field is acceptable.
- He/she has completed the requisite research methods coursework for the research to be pursued.
- I understand that he/she plans to graduate with Honors.


Department Chair (signature)

Research Advisor

I have read and support this proposal:

Secondary Advisor (signature)

If human subjects or if live vertebrate animals are involved, evidence of approval from the Institutional Review Board or an Animal Use Committee is needed through the campus scholarly research offices (Ext. 6361)