Generating Car Models using Generative Adversary Networks

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1 Summary of the Proposal

Generative Adversary Networks (GAN will be used throughout this paper) is a recent phenomenon in machine learning that generates data from scratch. Applications of GAN include topics such as, but not limited to, auto-generating anime characters and creating images from text. In this project, we will be implementing various machine learning algorithms to auto-generate new car models that have never been introduced using GAN. GAN uses deep networks to achieve the desired output. The two deep networks that are implemented are the generator, and the discriminator. During the tenure of the semester, we look forward to implementing these deep networks to test and train data to produce efficient models.

2 Background

2.1 History

GAN has taken machine learning by storm and will continue to do so because of it's powerful ability. One of the more impressive applications of GAN is in game development and animation. Hiring production artists can be costly and inefficient because of the repetitiveness of the task. GAN can assist greatly by auto-generating characters.

2.2 Previous Work and Open Problems

A limitation of GAN can be the lack of computational resources. Because creating generative data is hard as opposed to processing data, generating images from high resolution data can become computationally intensive (slow training). Without extensive data, the generator could collapse which limits the production of generated images.

To better optimize the cost function, feature matching can limit or minimize the differences between the training data and generative data. Minibatch discrimination has been proven to be effective to mitigate mode collapse. Because of the vast amount of variables that are taken into consideration when training the data, Adam optimization will be our algorithm of choice when optimizing the generative and discriminative deep networks.

Goal and Objectives

You insert a separate section here and write about the goal(s) of your research and the objectives that will meet the goal. Typically, the way to write this is something like, "The goal of this research is to ...", and then continue with something like, "Goal 1 will be met by achieving the following objectives ...", and so on. The goal is a broad based statement, and the objectives are very specific, achievable series of statements that will show how you will achieve the goal you set out.

Data and Methods

This is going to be the third and final section of your proposal. In the data and methods section, you include the following items:

- Write about the data that you will extract, generate, or use.
- You will describe in details about the data like type, size and dimension.
- Write about the method you may use.
- Write about how to improve the method.

References