Homework Assignment 3

Due Date: 6pm on Tuesday March 14th

1. Reading summary (6 points)

Please summarize the reading material in your own words. This exercise will help you comprehend the main objectives in the reading besides the technical details. Your summary should consist of three parts:

1. One-sentence summary
2. One-paragraph summary
3. Half-page summary

2. Questions (4 points)

Please select **Three** questions to answer from the following list, and write down **one** question that you have about reading material. Your question can be about a specific concept that is difficult to understand, a line of confusion, or something you would like to learn more about.

- What challenges in deep generative models are addressed by the adversarial net framework?
- What training techniques are proposed in this paper to avoid overfitting and saturation of gradients?
- What assumptions does Proposition 2 make to prove the convergence of Algorithm 1? How do they affect the theoretical guarantee of adversarial nets in practical training?
- What are some advantages and disadvantages of adversarial nets compared to previous methods?
- How can we incorporate auxiliary attributes in the adversarial nets? hint: consider how we derived CVAE from VAE
- What are the similarities and differences between GAN and VAE?
- Please describe some applications of GAN besides generating images.