Deep Learning (CEE690.06) – Assignment 4

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Due: 11/6/2018

**Problem 1: Variational Lower Bound**

1. *Show if and only if*

We can start out with the following function:

If , then for all cases as

Therefore

For all cases where and

So if , then

1. *The equality above holds for*

The variational lower bound is described as:

We want to make sure holds true

and

So

If , then

So

And , so our statement holds true

**Problem 5: Bookkeeping**

1. *How many hours did this assignment take you? (There is No correct answer here, this is just an information gathering exercise)*

Problem 1: 1.5 hours

Problem 2: 0.5 hours

Problem 3: 1.0 hours

Problem 4: 3.0 hours

Problem 5: 0.25 hours

Overall 6.25 hours. I got a little stuck on the conditional GAN because I didn’t initially realize that I needed to include the label with the discriminator and was instead messing around with loss functions. Once I figured that out it didn’t take much more time.

1. *Verify that you adhered to the Duke Community Standard in this assignment (https://studentaffairs.duke.edu/conduct/about-us/duke-community-standard), i.e., write “I adhered to the Duke Community Standard in the completion of this assignment”*

I adhered to the Duke Community Standard in the completion of this assignment