Quiz 9 Solutions

CSE 4/574

Fall, 2024

Question 1

In GAN models, will $log(D(G(z)))$ be saturated at early in learning when G is poor?

Correct Choice

No, as discriminator can reject generated sample with high confidence

Explanation:
In a Generative Adversarial Network (GAN), the generator G produces fake samples, and the discriminator D tries to distinguish between real and fake samples.

When the generator is poor early in the training process, D can easily classify the generated samples as fake, leading to a high value for D(G(z)).

The logarithm of this value, log(D(G(z))), does not saturate because the discriminator rejects the generated samples with confidence, which correspond to a large gradient signal for G to improve.

Question 2

Which of the following is not the aim of the generator G in GAN model?

Correct Choice

minimize classification error for discriminator;
Explaination:

The generator G is trained to create realistic data that maximizes the discriminator's classification error for fake samples.

G aims to make the generated data indistinguishable from the real data, effectively maximizing log(1 - D(G(z))) or equivalently minimizing log(D(G(z))).

Directly minimizing the classification error for the discriminator is opposite to the idea of GANs, where G and D compete with each other.