HW5

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1 GANs

1. See the attached notebook.
2. See the attached notebook.
3. A GAN was trained on the MNIST dataset with Adam optimizer for 10.000 epochs. Both the encoder and the decoder have MLP architectures. The latent space has dimension 32 and results for randomly generated Gaussian z's are shown in Figure 1.
   Some of the digits don't make any sense, while others are ambiguous.

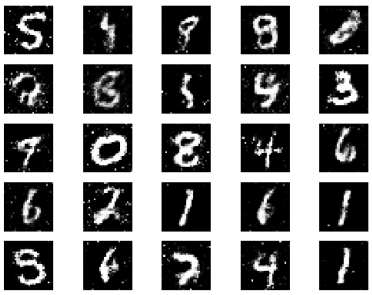

Figure 1: Results of the GAN

2 Conditional GANs

1. See the attached notebook.
2. A conditional GAN was trained on the MNIST dataset with Adam optimizer for 12.500 epochs (there was an out-of-memory error when adding epochs on my machine). Both the encoder and the decoder have MLP architectures. The latent space has dimension 32 and results for randomly generated Gaussian z's are shown in Figure 2.
   Compared to the vanilla GAN, this technique yields images that look slightly less blurry and easier to identify.

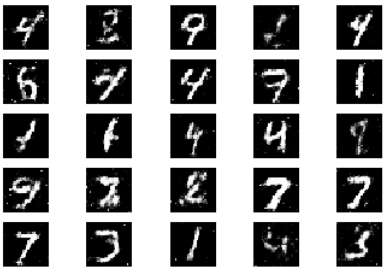

Figure 2: Results of the conditional GAN