

# Homework 8: Deep Learning

Due July 7, beginning of exercise session  
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upload link: <https://www.dropbox.com/request/OEyNaA11EGyiexfyadSa>

## 1. Generative Adversarial Networks.

Generative adversarial networks (GANs) [1] are a type of neural architectures that consist of a generative and a discriminative model. A generative model is capable of generating data samples, and a discriminative model learns to predict whether data samples come from real data or the generator.

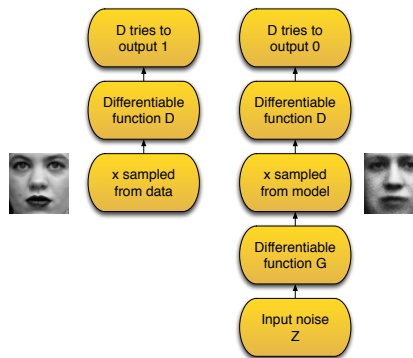


Figure 1: Illustration of GANs<sup>1</sup>

In this homework, you will implement the vanilla GAN architecture presented in [1], (see Section 5 for details). We consider the MNIST dataset which means that the generator is trained to generate handwritten digits.

Report training loss curves of both components at each epoch separately and plot samples drawn from the generator periodically in order to show how your GAN implementation is improving.

## References

- [1] I. Goodfellow, J. Pouget-Abadie, M. Mirza, B. Xu, D. Warde-Farley, S. Ozair, A. Courville, and Y. Bengio. Generative adversarial nets. In *Advances in neural information processing systems*, pages 2672–2680, 2014.