# Semi-Supervised Learning with Generative Adversarial Networks

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**Abstract**

They extend GAN to semi-supervised context by forcing discriminator network. They train generative model G and discriminator D on dataset with inputs which belongs to class N.

They show that by this method a more data-efficient classifier can be created and high-quality sample generated than regular GAN

**Introductions**

They try to solve semi-supervised classification task and learn generative model simultaneously.

They described extension to GANs i.e. Semi Supervised GAN (SGAN), it improves performance on restricted datasets

They demonstrated SGAN improves the quality of generated samples and reduces training time of generator.

Training SGAN is similar to training GAN, we use higher granularity labels for half of minibatch that were in data generating distribution, D/C (D can act as C) is trained to minimize negative log and G is trained to maximize it. They ran experiments on MNIST datasets to determine that SGAN result are better than regular GAN