Project 7: Generative Adversarial Networks

Explore Advanced GAN Strategies

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Objectives:

Develop and compare traditional GAN and WGAN.

Evaluate the quality of the generated samples.

Evaluate GANs under different metrices.

Heilmeier Catechism:

- What are you trying to do? Investigate stable training processes for GANs through the implementation of innovative loss functions.
- How is it done today? Explain the traditional GAN and a little bit of Wasserstein loss.
- Your approach and why do you think it will be successful? Implementing AC-GAN and WGAN for the CIFAR10 dataset. By following the architectures in the paper, we anticipate a decrease in mode collapse and an increase in the diversity of generated images.
- What are the risks? The Wasserstein loss may not translate into noticeably improved image quality in practical applications.
- How long will it take? Schedule for 5 weeks.
- What are the final "exams" to check for success? Code implementing the method, table showing comparison results, quantitative metrics such as accuracy and cosine similarity.