1. Motivation

- Poor quality of images generated by state-of-the-art GANs under limited data.
- To ease the practical deployment of GANs while preserving the quality.
- Sufficient data is sometimes infeasible, sparse, or privacy-sensitive.

2. Underlying Cause: Discriminator Overfitting

- The discriminator predictions diverge much more rapidly with limited training data, indicating quick overfitting.
- The overfitting of the discriminator impedes the generator’s convergence, rendering severe instability of training dynamics.
- The less informative feedback to the generator leads it to converge to an inferior point, compromising the quality of synthesized images.

3. Methodology

- Adaptive Pseudo Augmentation (APA) to address discriminator overfitting and improve generator convergence.

4. Results and Analysis

- Effectiveness of APA: given different data amounts
  - 1k (~1.4% data)
  - 5k (~7% data)
  - 7k (10% data)
  - 70k (100% data)

- Effectiveness of APA: overfitting and convergence analysis

- Comparison with Other State-of-the-Art Solutions
  - FFHQ-5k (1024 × 1024)