Motion Diffusion Model to Denoising Diffusion GAN: Efficient Motion Sampling

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Abstract

All existing motion diffusion models use the standard diffusion process which yields high quality samples. However, the standard process for these models can be inefficient. These are one of the challenges with the learning trilemma and this works concerns embedding an existing motion diffusion model into denoising diffusion GANs to create a hybrid architecture of the motion diffusion model. This new hybrid model will satisfy the learning trilemma, thus improving the sampling speed when training and generating a motion sample. *https://github.com/CAP6412-Group-4/denoising-diffusion-gan*

1. Introduction

1.1. Human Motion Diffusion Model

1.2. Improving Sampling

1.3. Integrating Motion Diffusion Model Into DDGAN

2. Related Work

2.1. Human Motion Diffusion Model

2.2. Denoising Diffusion GANs

3. Method

3.1. Motion Diffusion Model Integration

3.2. Adapting The Loss

3.3. Training

4. Experiments

5. Results

5.1. Quantitative Results

5.2. Qualitative Results

6. Additional Applications

Once our hybrid motion diffusion model was complete and generating results, we want to see how we can leverage the motion samples for other applications. One application we wanted to try was person image synthesis. [1]

6.1. Using Motion Samples for Person Image Synthesis

7. Conclusion and Future Works

References

[1] Ankan Kumar Bhunia et al. Person image synthesis via denoising diffusion model, 2023. 1