

Tensor-Train Diffusion Models

M. Baddar , M. Eigel

April 24, 2024

1 Abstract

In this work, we explore the application of fixed, low-rank tensor-train to Denoising Probabilistic Diffusion Models. We show the parametric noise can be modeled using tensor-trains and basis functions. We will also provide details on how the model can be trained using Riemannian Optimization algorithm for fixed-rank tensor-trains. The main objective is to develop a more efficient DDPM with respect to memory and training-time.

2 Background

3 Proposed Model

4 Model Training