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Projection Embedded Schrödinger Bridge for CT Sparse View Reconstruction

摘要

在这项工作中，我们提出了投影嵌入薛定谔桥（Projection Embedded Schrödinger Bridge, PESB）用于 CT 稀疏视图重建。PESB 在滤波反投影（Filtered Back-Projection, FBP）重建图像的分布与基于测量投影的干净图像分布之间构建了薛定谔桥。通过将投影嵌入到边际条件中，数据一致性被自然地整合到生成过程中。实验结果验证了 PESB 的有效性，证明了其在 CT 稀疏视图重建中优于多种基于扩散模型的性能。

关键词

CT 稀疏角重建，扩散模型，薛定谔桥

Abstract

In this work, we proposed the Projection Embedded Schrödinger Bridge (PESB) for CT sparse view reconstruction. PESB constructs Schrödinger Bridges between the distribution of Filtered Back-Projection (FBP) reconstructed images and the distribution of clean images conditioned on measured projections. By embedding projections into the marginal conditions, data consistency is inherently incorporated into the generative process. Experimental results validate the effectiveness of PESB, demonstrating its superior performance in CT sparse view reconstruction compared to several diffusion-based models.

Keywords

CT sparse view reconstruction, diffusion model, schrodinger bridge

Authors: 宇昂, 王 (清华大学工程物理系); Mr 志强, 陈 (清华大学工程物理系); 丽, 张 (清华大学工程物理系)

Presenter: 宇昂, 王 (清华大学工程物理系)

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