

Why is this Process Necessary?

Part 2/7: Forward Process



Understanding the Fundamental Motivation



Tractable Posterior

Known distribution $q(x_{t-1}|x_t, x_0)$ enables efficient training



Curriculum Learning

Start easy (small noise), gradually increase difficulty



Stable Gradients

Small steps ensure smooth gradient flow during training



Mode Coverage

Noise prevents collapse to single mode



Theoretical Foundation

Enables variational bound derivation for optimization



Flexible Design

Can adjust β_t schedule for different data types



Reversibility

Ensures reverse generative process is well-defined



The forward process creates a tractable learning framework that makes the reverse process trainable