



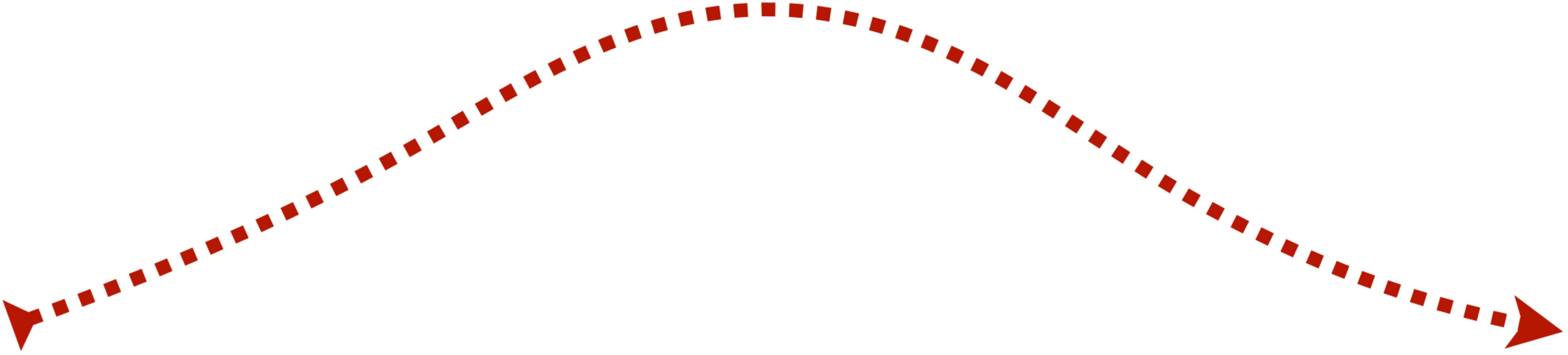
The landscape of deep generative models is a vast and complex terrain, shaped by the intricate interplay between various modeling paradigms. At its core, this landscape is defined by the quest for more expressive and efficient generative models, which have the ability to capture the underlying patterns and structures of complex data distributions. The path through this landscape is marked by numerous milestones, from the early days of simple probabilistic models like the Gaussian Mixture Model (GMM) and Restricted Boltzmann Machines (RBMs), to the emergence of more advanced techniques such as Variational Autoencoders (VAEs), Generative Adversarial Networks (GANs), and Generative Latent Dirichlet Allocation (LDA). As we navigate this terrain, we encounter a variety of challenges, including the need for large amounts of training data, the difficulty of handling high-dimensional data, and the trade-off between model complexity and computational efficiency. Despite these challenges, the field of generative modeling continues to evolve, driven by a desire to push the boundaries of what is possible and to find new ways to apply these models to real-world problems. The future of this landscape is likely to be characterized by continued innovation, as researchers and practitioners work to develop ever more sophisticated and versatile generative models that can tackle a wide range of complex data domains.

Generative adversarial networks

Karsten Kreis; GVR 2022 Tutoria

Autoregressive models

Energy-based models



variation and advertisement

information

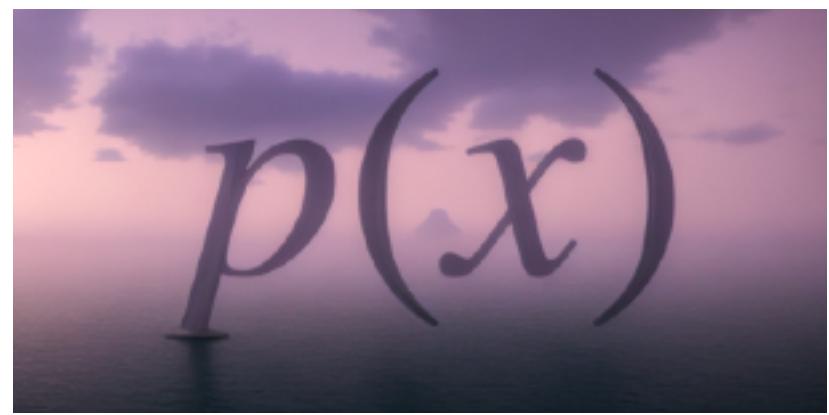
informalizing flows

The landscape of deep generative models

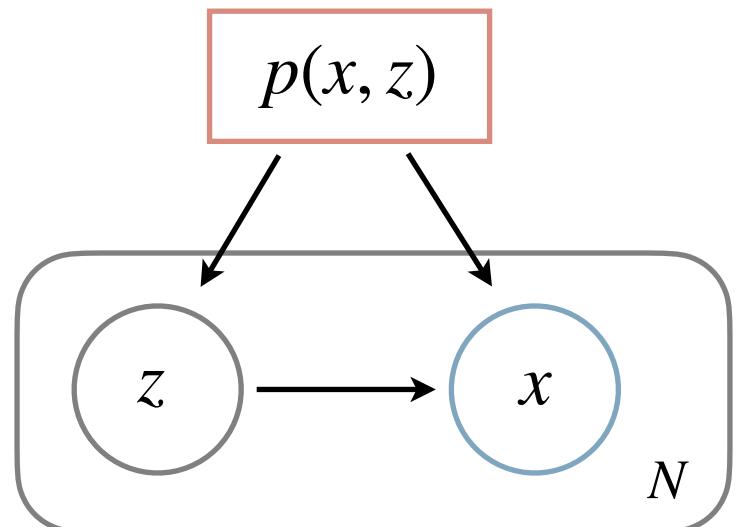
[Karsten Kreis; [CVPR 2022 Tutorial](#)]



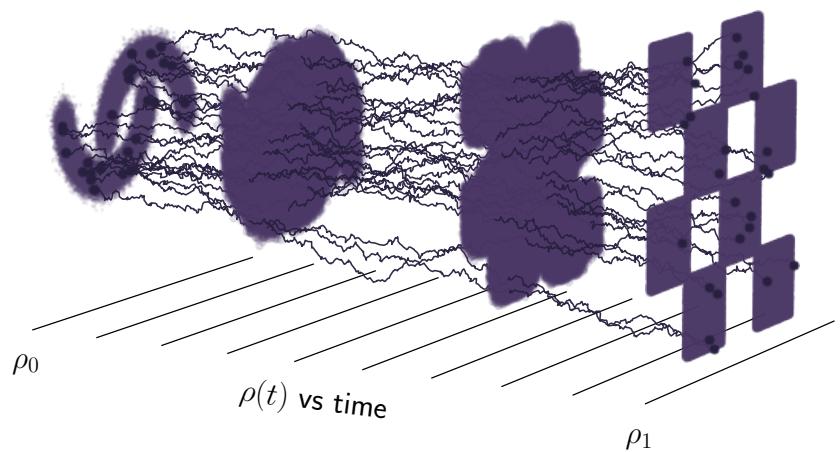
Outline



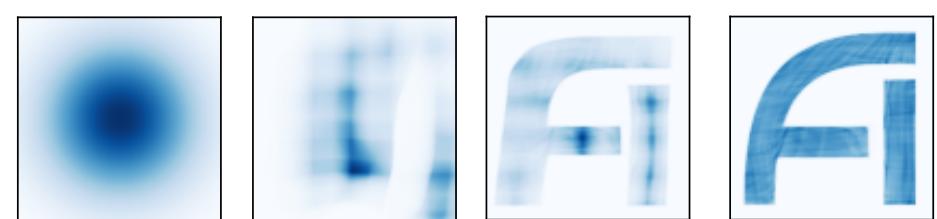
Why (deep) generative modeling?
What is it, and what can it do for you?



Variational auto encoders
Latent-variable modeling, and compression is all you need



Diffusion models
Models based on iterative refinement



Normalizing flows
Invertible transformations