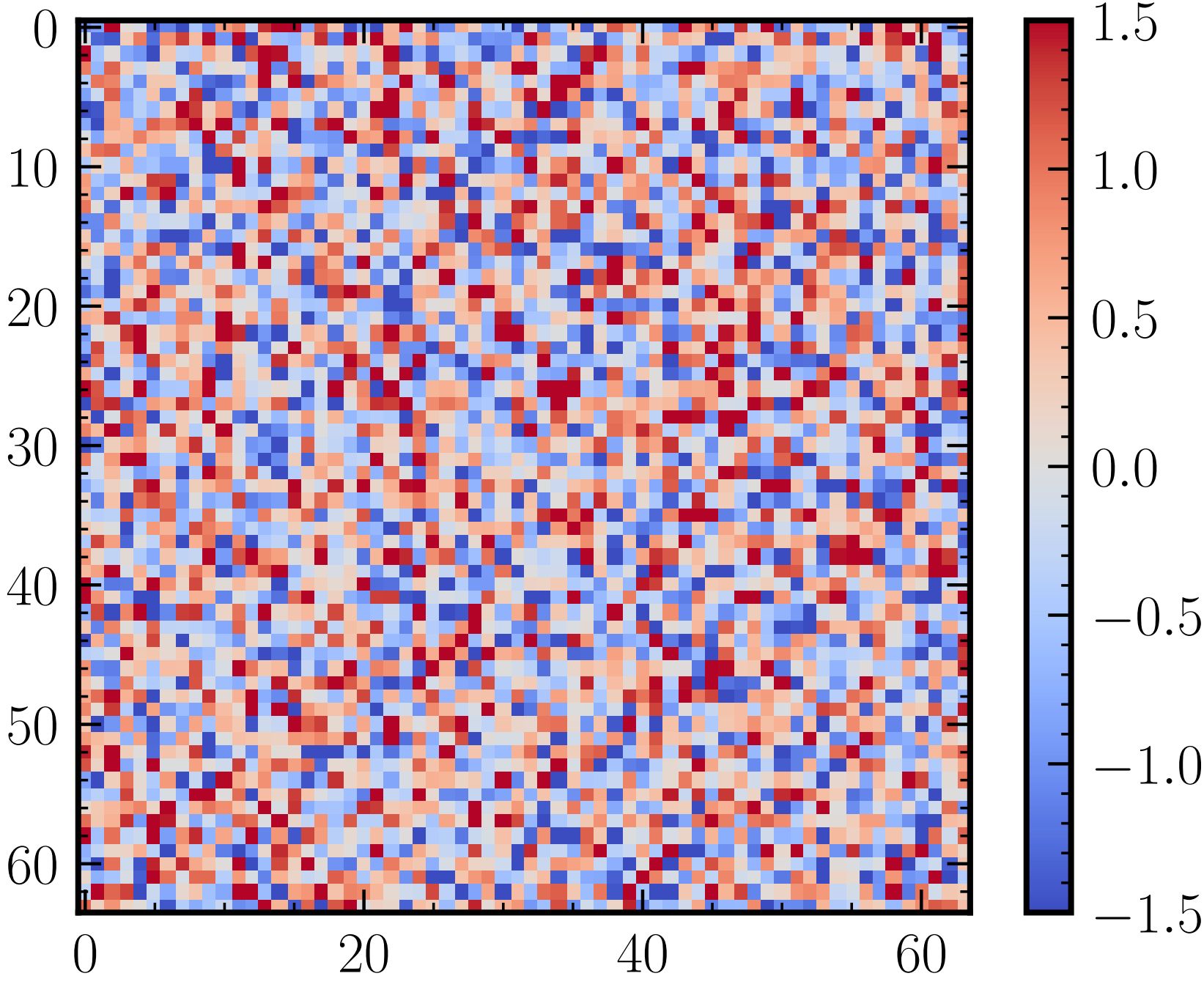
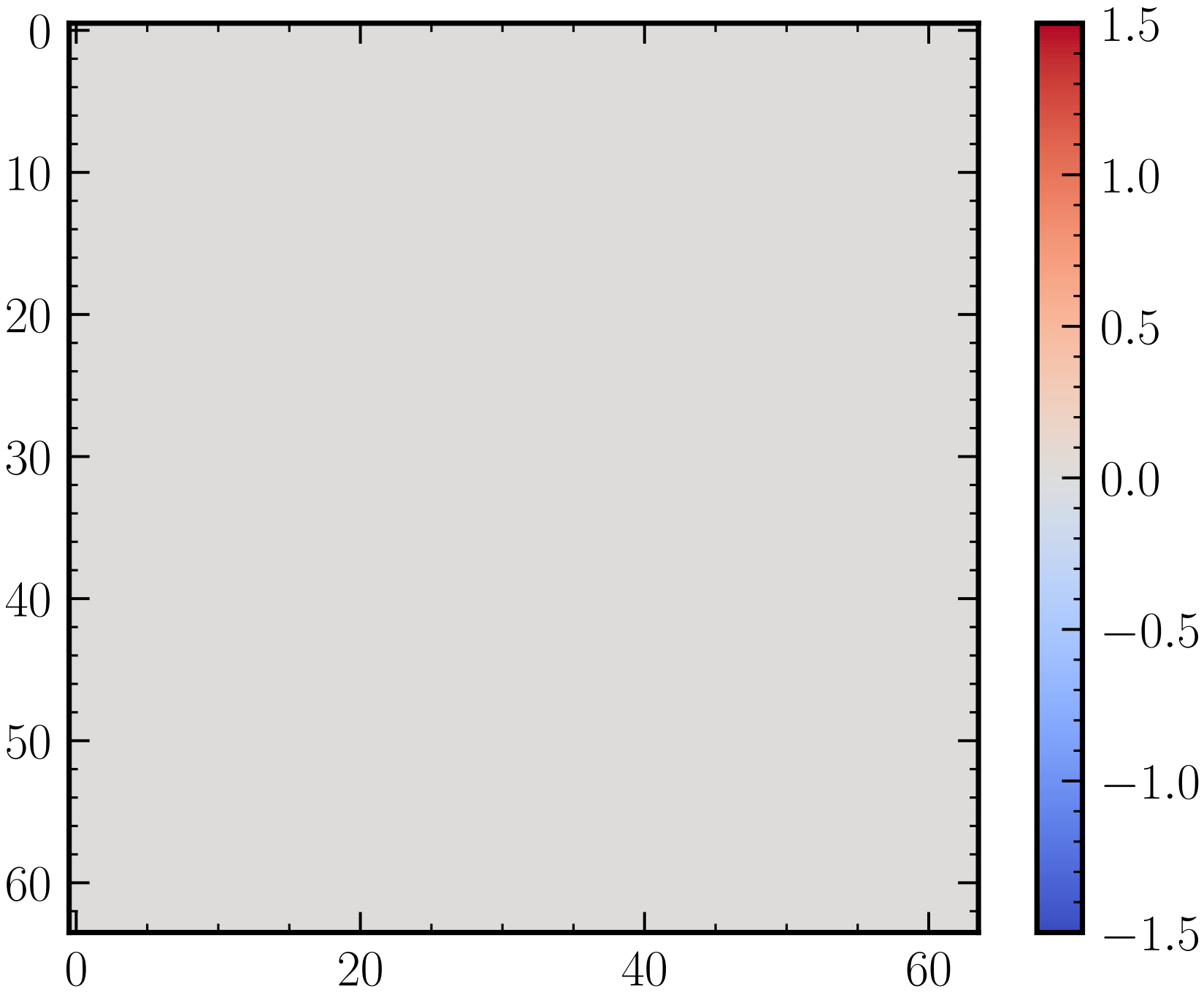
/70

12

Typicality and likelihood of samples

Which of these samples have a higher likelihood under $\mathscr{L} = \mathcal{N}(0, \mathbb{I}_d)$?


0
10
20
30
40
50
60
0
20
40
60
1.5
1.0
0.5
0.0
−0.5
−1.0
−1.5


0
10
20
30
40
50
60
0
20
40
60
1.5
1.0
0.5
0.0
−0.5
−1.0
−1.5

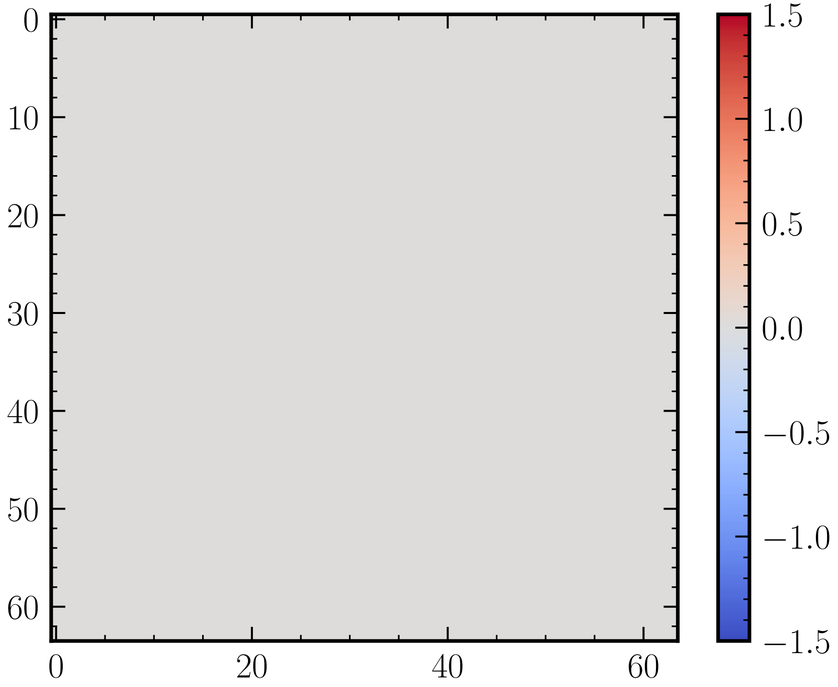
$\log \mathscr{L} \approx -0.92$ nats/dim

$\log \mathscr{L} \approx -1.43$ nats/dim

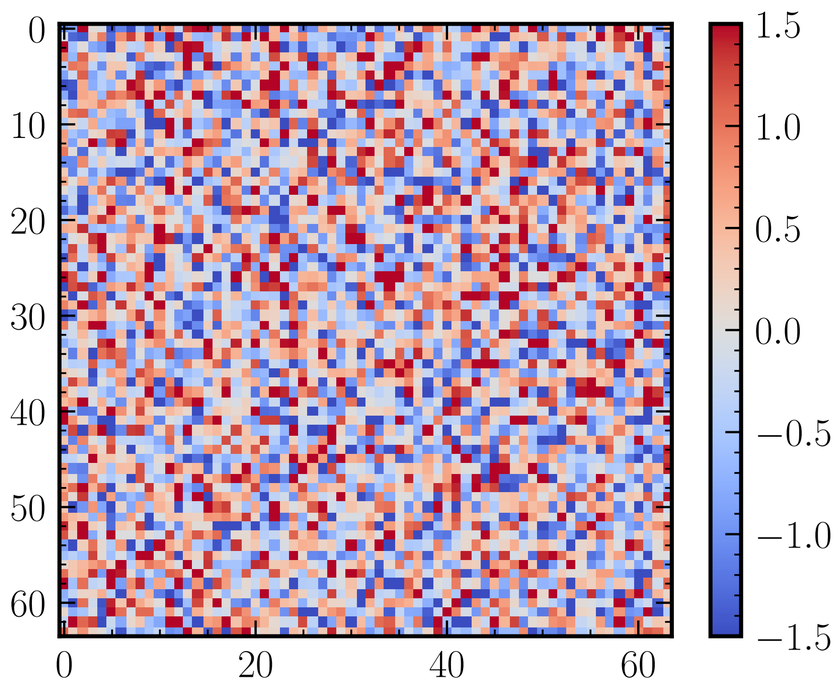
Evaluation of high-dimensional distributions is challenging!

Typicality and likelihood of samples

Which of these samples have a higher likelihood under $\mathscr{L} = \mathcal{N}(0, \mathbb{I}_d)$?



$\log \mathscr{L} \approx -0.92$ nats/dim

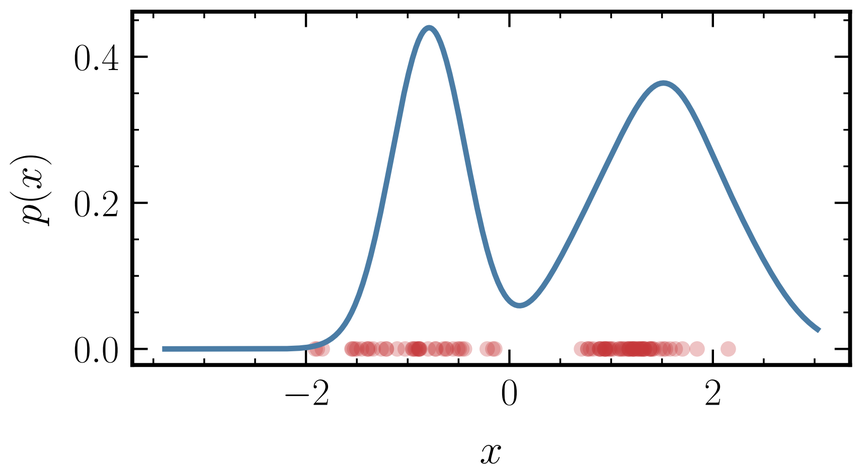


$\log \mathscr{L} \approx -1.43$ nats/dim

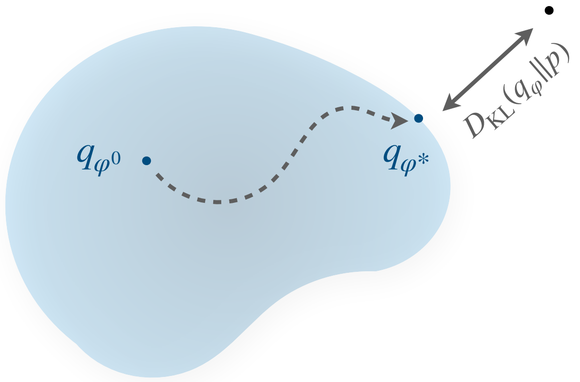
Evaluation of high-dimensional distributions is challenging!

(Some) Ways of training deep generative models

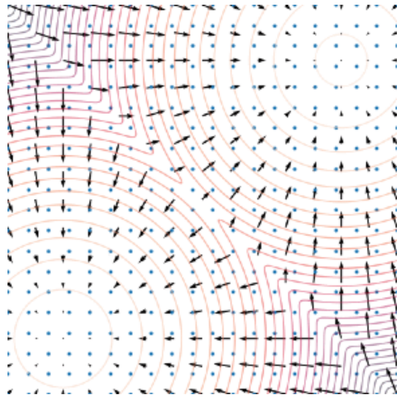
Maximum-likelihood



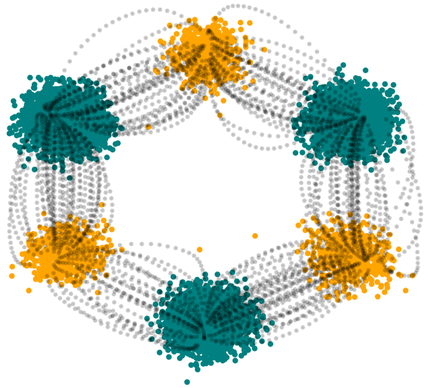
Optimizing a bound on the likelihood



Score-matching



Optimal transport



Adversarial training