Variational Autoencoder (VAE)

Reparameterization

Input
x

Encoder
q_φ(z|x)
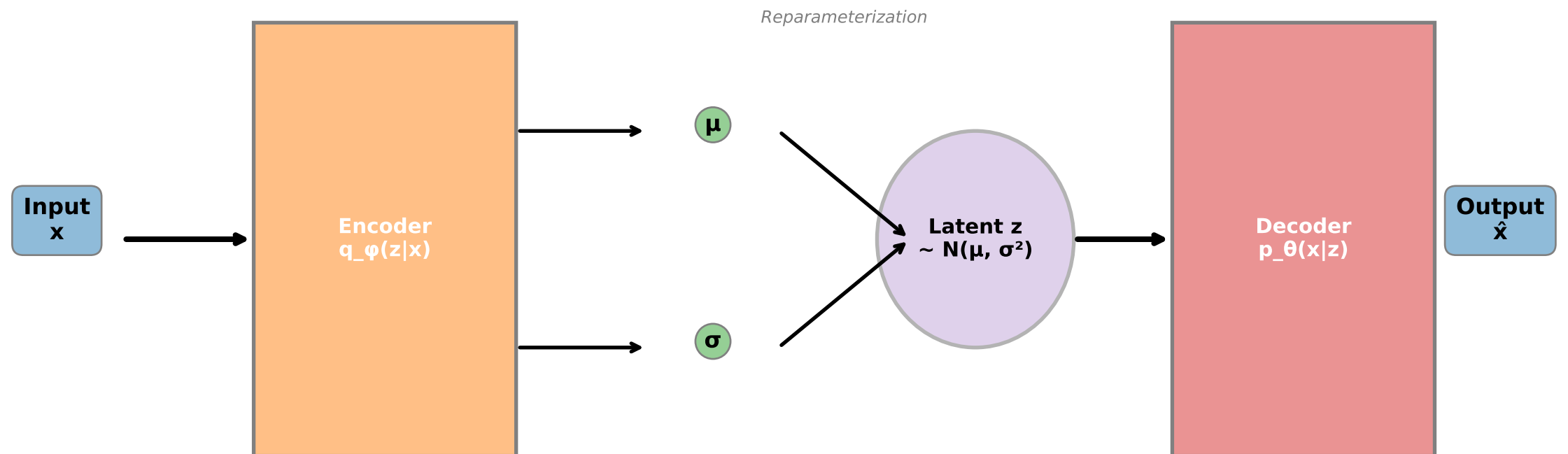
μ

σ

Latent z
~ N(μ, σ²)

Decoder
p_θ(x|z)

Output
x̂

$$\mathcal{L} = \mathbb{E}_{q_\phi(z|x)}[\log p_\theta(x|z)] - D_{KL}(q_\phi(z|x)||p(z))$$

ELBO: Reconstruction Loss + KL Divergence