VAE Scheme

Encoder

Conv + MaxPool

Conv + MaxPool

28x28x1

28x28x14   14x14x14

14x14x64   7x7x64

FLATTENED

Latent Space

Dense

μ

σ

z

Gaussian Distribution

Decoder

RESHAPED BACK

ConvTranspose

7x7x64   14x14x64

Input   Output
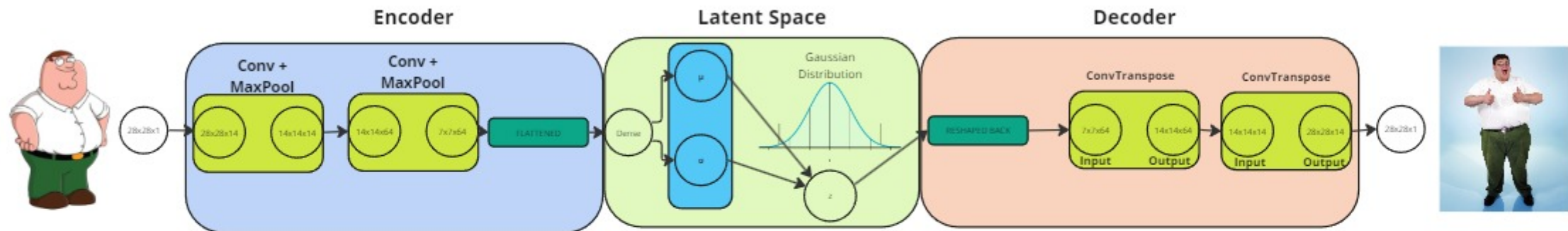
ConvTranspose

14x14x14   28x28x14

Input   Output

28x28x1

KL Loss

Kullback-Leibler (KL) divergence, or relative entropy, is a metric used to **compare two data distributions**.

$$KL(P||Q) = \sum_x P(X) * log\left(\frac{P(X)}{Q(X)}\right)$$

X - possible event in the probability space.
P(x) and Q(x) - probabilities of x in the distribution of P and Q, respectively.
The ratio P(x)/Q(x) represents the relative likelihood of event "x" according to P compared to Q.