C-VAE

- Observed data is supposedly generated by an unknown function G of continuous latent variables and a condition Y

$$X = G(z, Y; \theta_g)$$

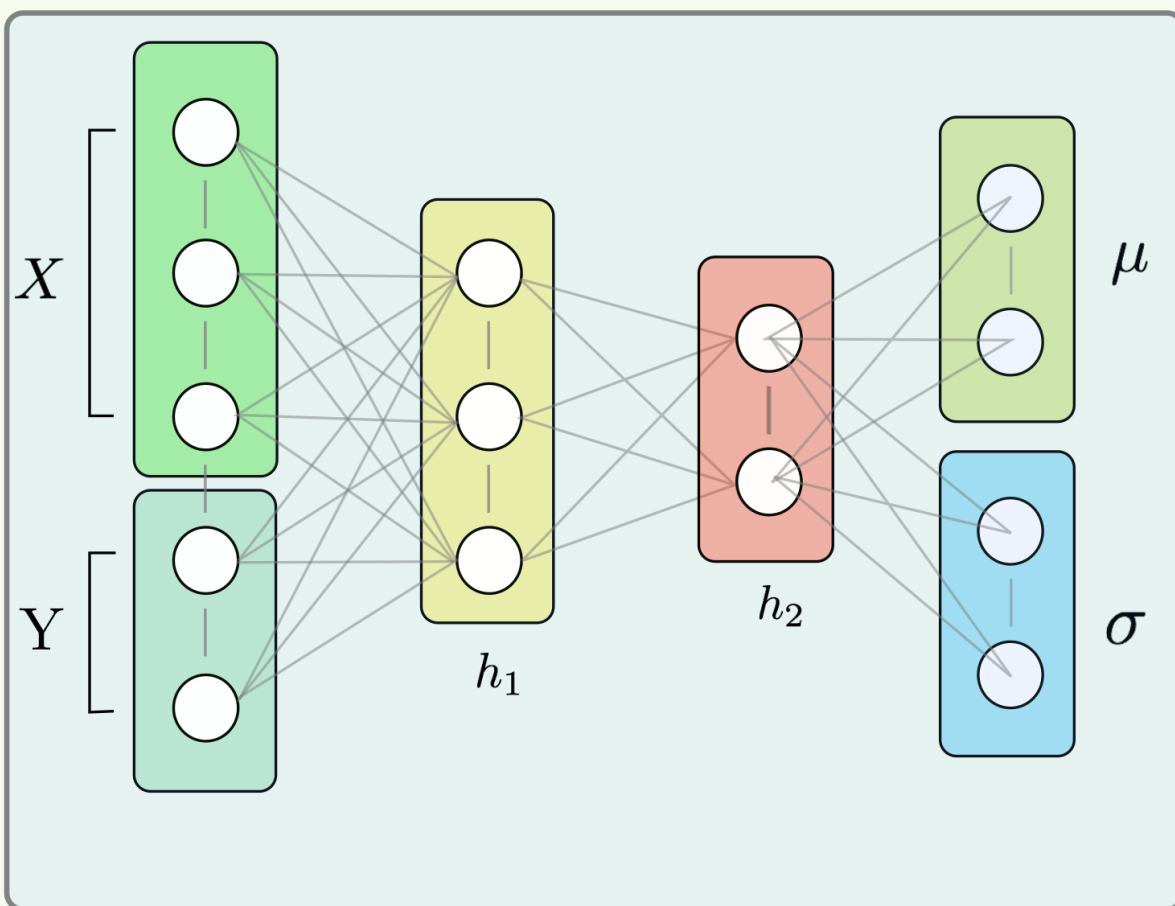- Recognition Model approximates

$$\mu, \sigma = Q(X, Y; \theta_e)$$

$$q(z \,|\, X) = \mathcal{N}(\mu, \sigma)$$

- C-VAE learns to model the conditional distribution of X and Y

Conditional Variational Auto Encoder

Recognition Model $Q(X, Y) = q(z|X, Y)$

X

Y

h_1

h_2

μ

σ

Generative Model $G(z, Y) = p(X|z, Y)$

z

$\mathcal{N}(\mu, \sigma) \sim$

Y

h_3

$\hat{X}$