



# A neural representation of sketch drawings : Sketch-RNN

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# Dataset and neural network



$(\Delta x, \Delta y, p_1, p_2, p_3)_1$

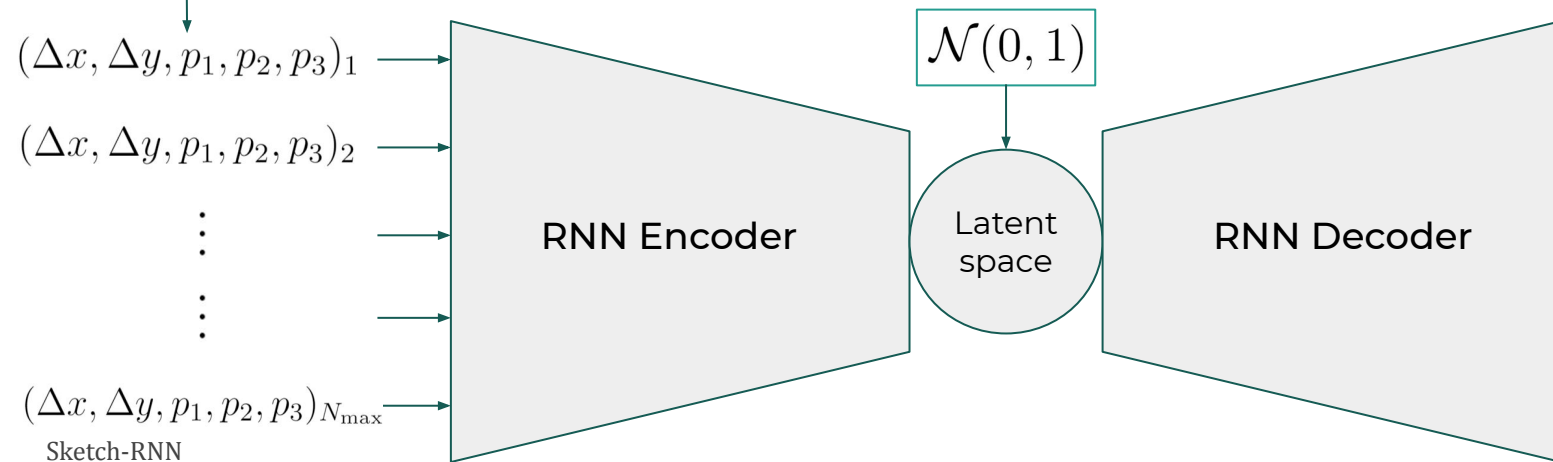
$(\Delta x, \Delta y, p_1, p_2, p_3)_2$

$\vdots$

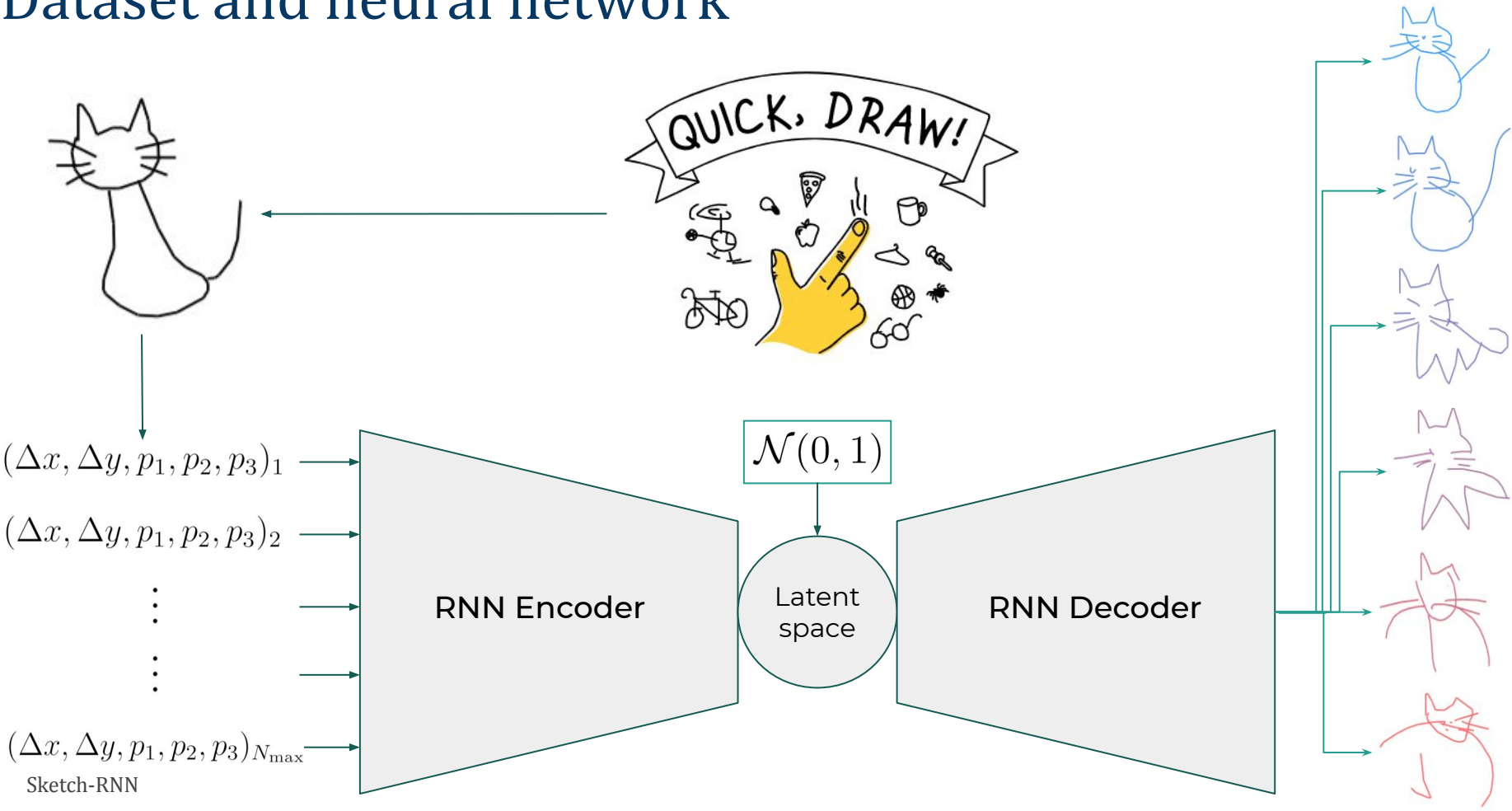
$(\Delta x, \Delta y, p_1, p_2, p_3)_{N_{\max}}$

Sketch-RNN

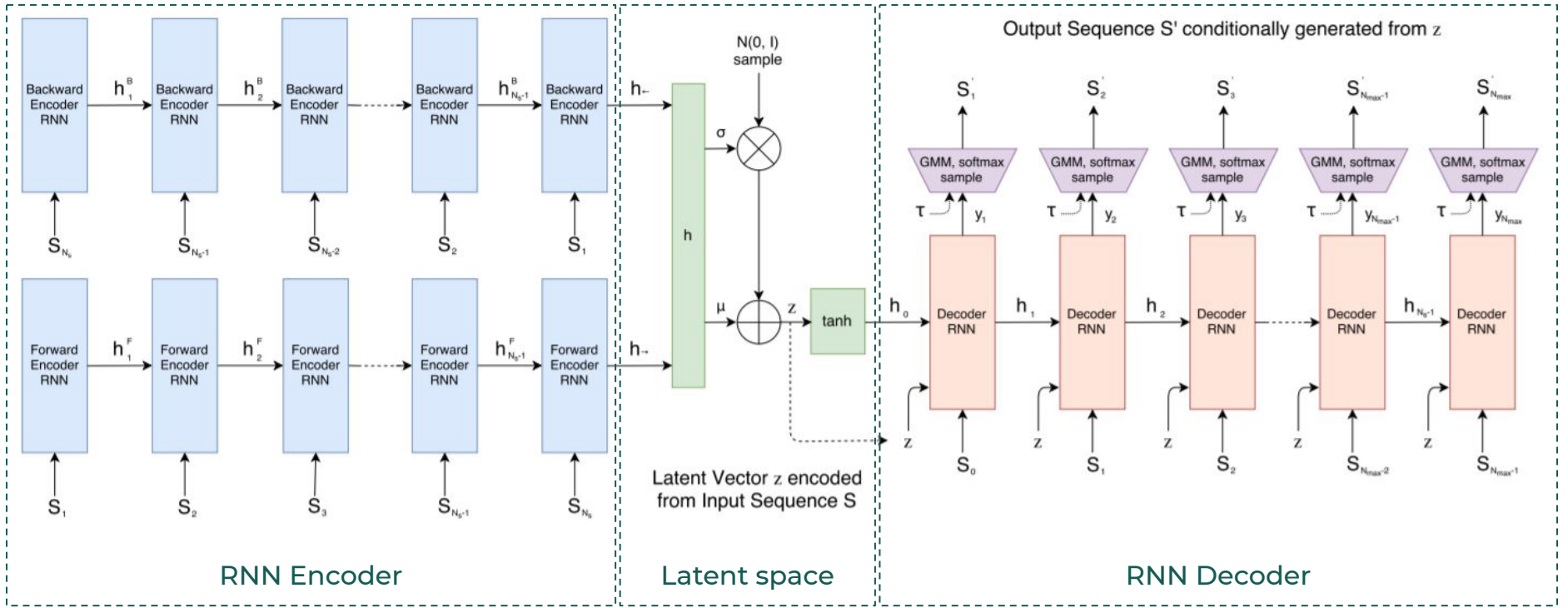
# Dataset and neural network



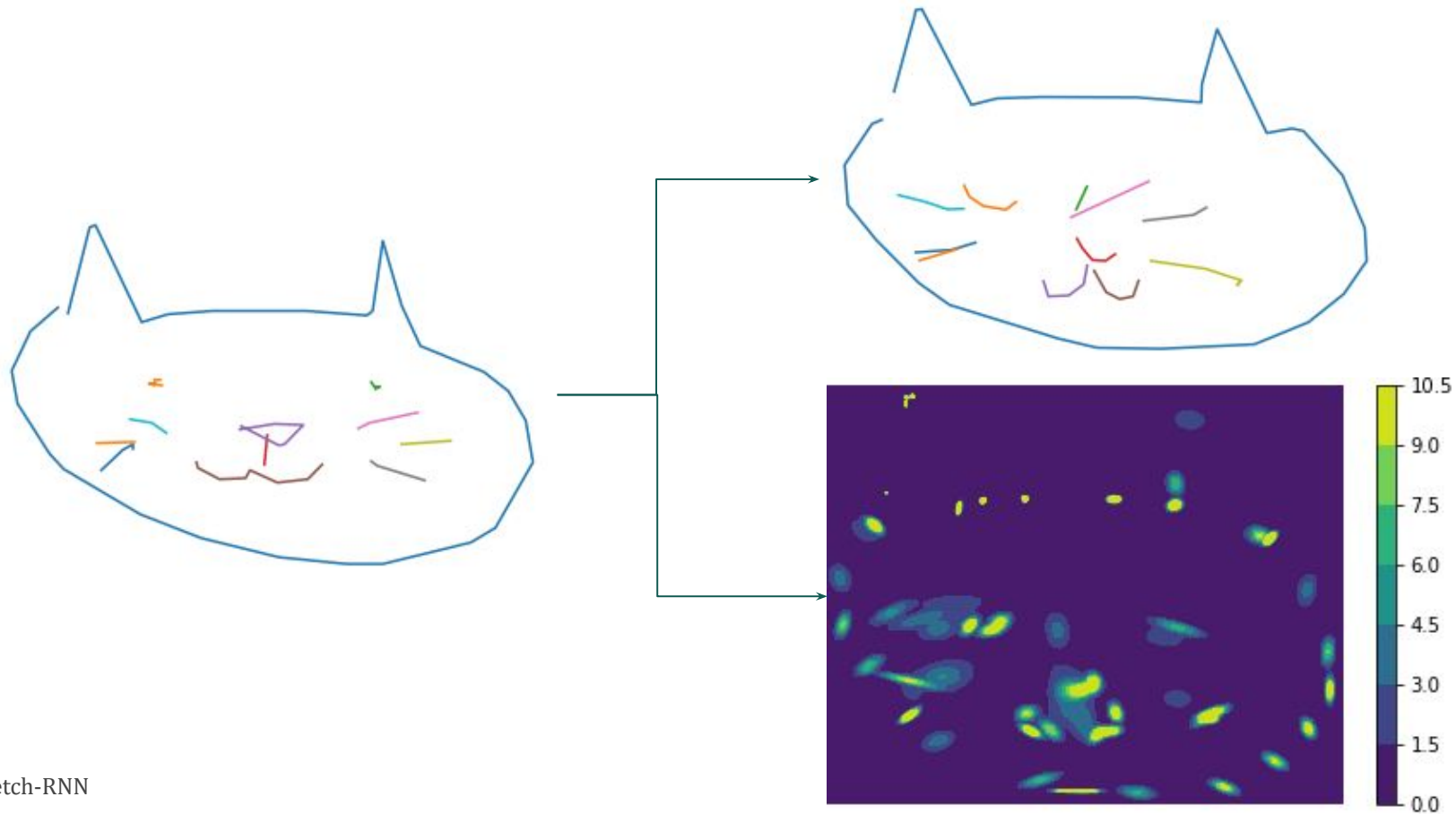
# Dataset and neural network



# Detailed network



# Conditional Generation: Density Mixture Plot



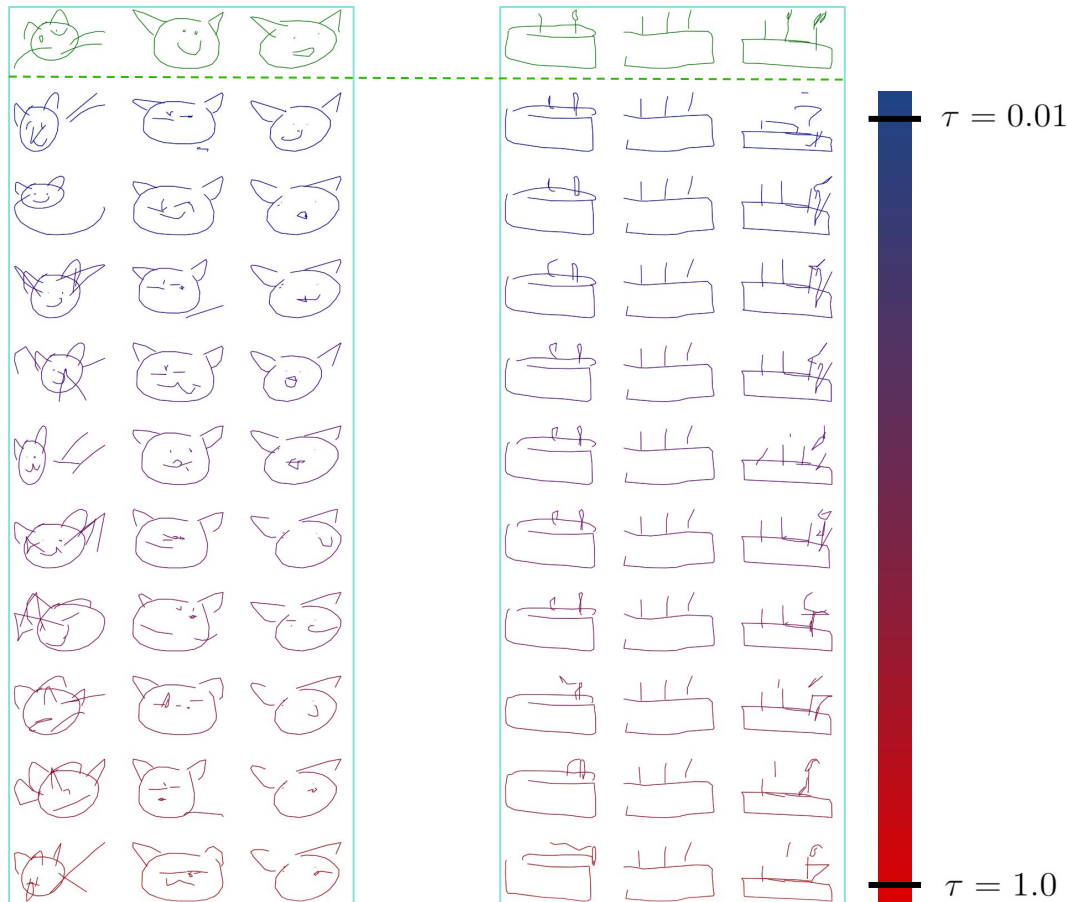
# Conditional Generation: Temperature Influence

$$\hat{q}_k \rightarrow \frac{\hat{q}_k}{\tau}$$

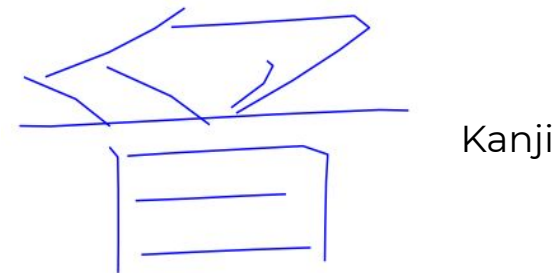
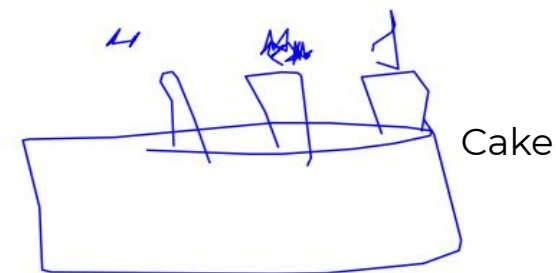
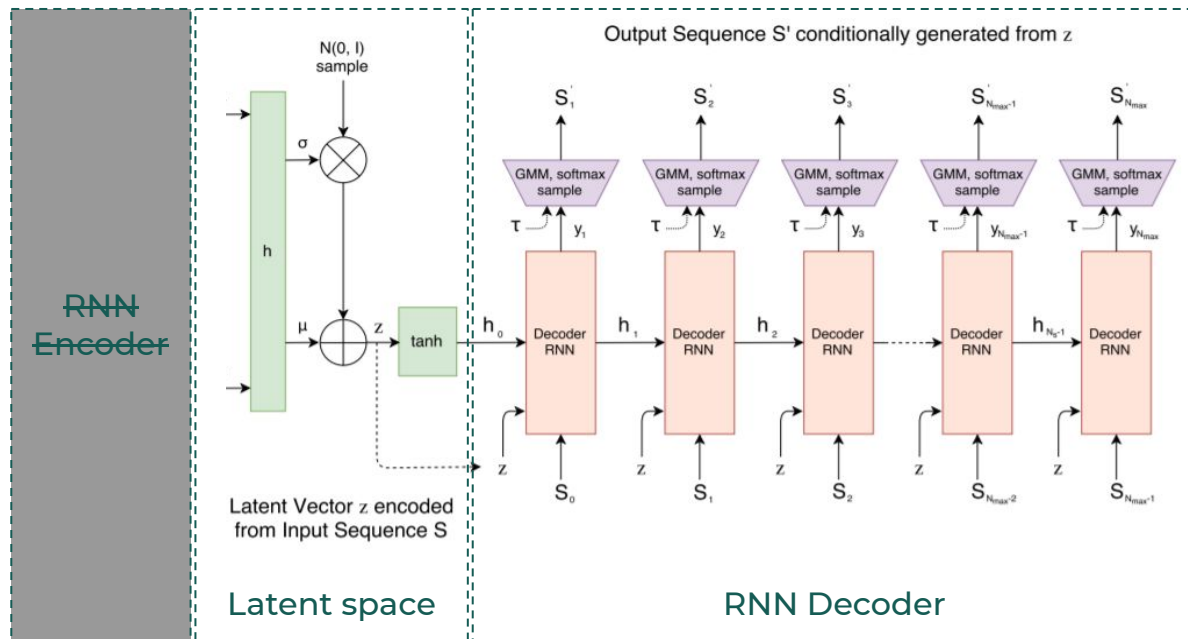
$$\hat{\Pi}_k \rightarrow \frac{\hat{\Pi}_k}{\tau}$$

$$\sigma_x^2 \rightarrow \sigma_x^2 \tau$$

$$\sigma_y^2 \rightarrow \sigma_y^2 \tau$$

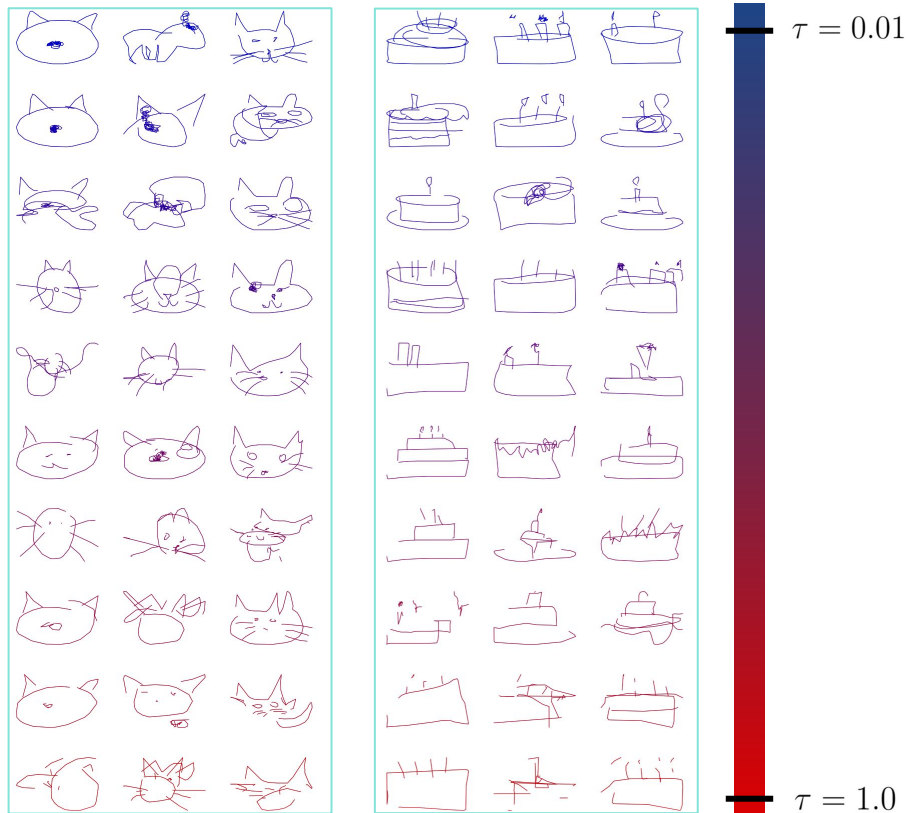


# Unconditional Generation





# Unconditional Generation: Temperature Influence



$$\hat{q}_k \rightarrow \frac{\hat{q}_k}{\tau}$$

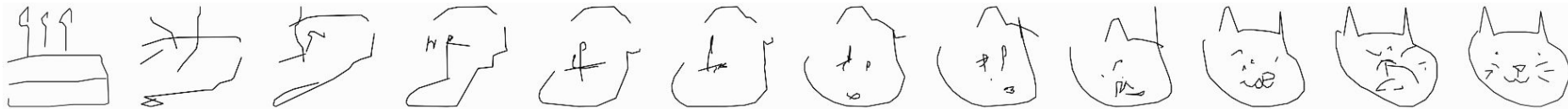
$$\hat{\Pi}_k \rightarrow \frac{\hat{\Pi}_k}{\tau}$$

$$\sigma_x^2 \rightarrow \sigma_x^2 \tau$$

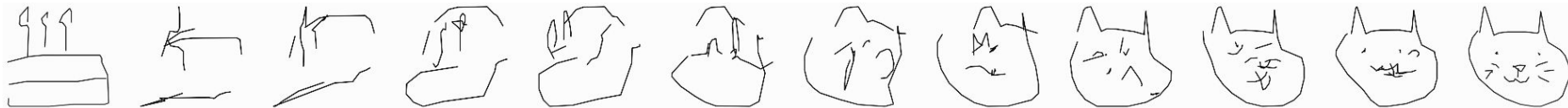
$$\sigma_y^2 \rightarrow \sigma_y^2 \tau$$

# Latent space interpolation

## Linear interpolation

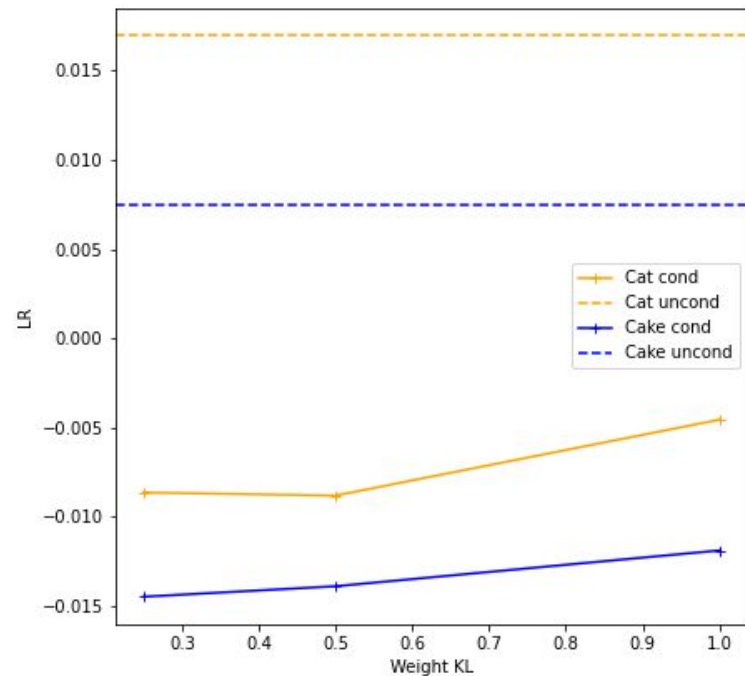
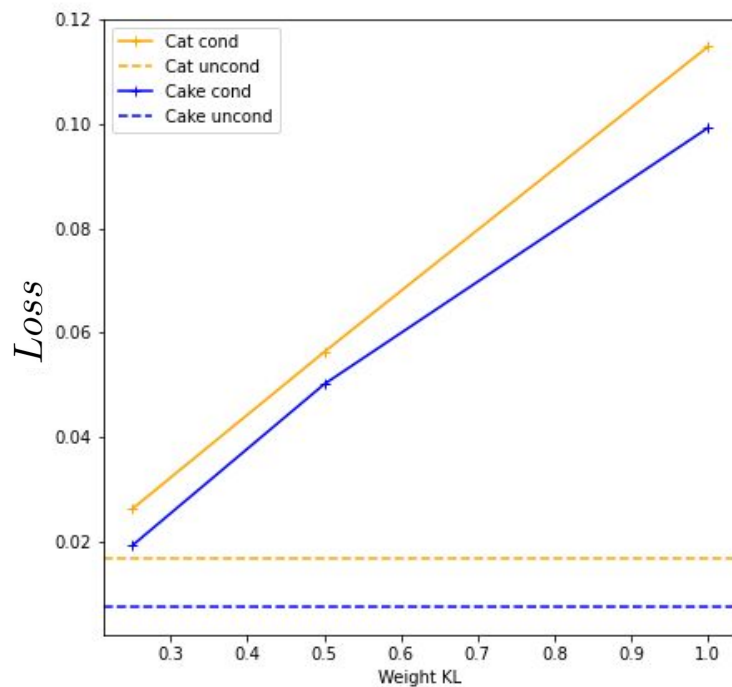


## Spherical-linear interpolation



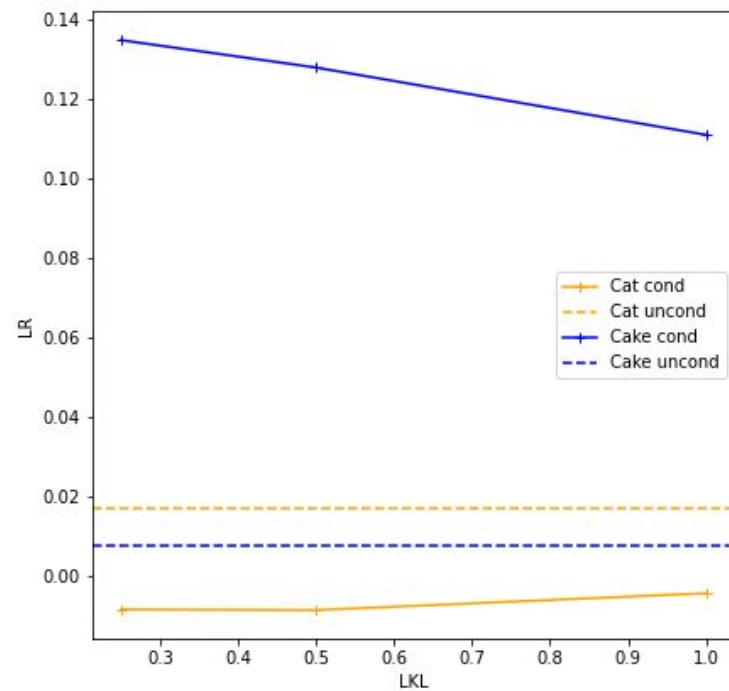
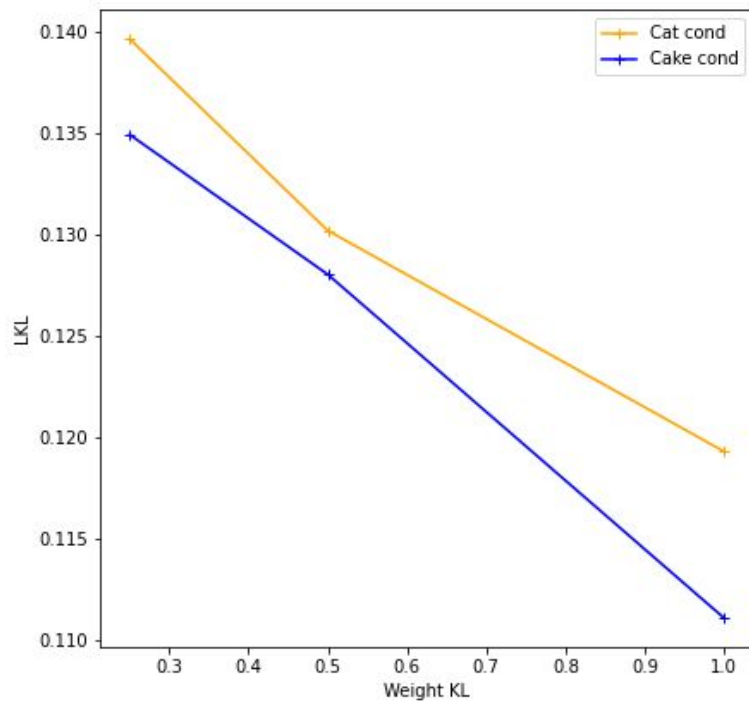
# KL influence : Loss

$$Loss = L_R + w_{KL}L_{KL}$$



# KL influence : Loss

$$Loss = L_R + w_{KL}L_{KL}$$



# KL influence : Sketch generation

