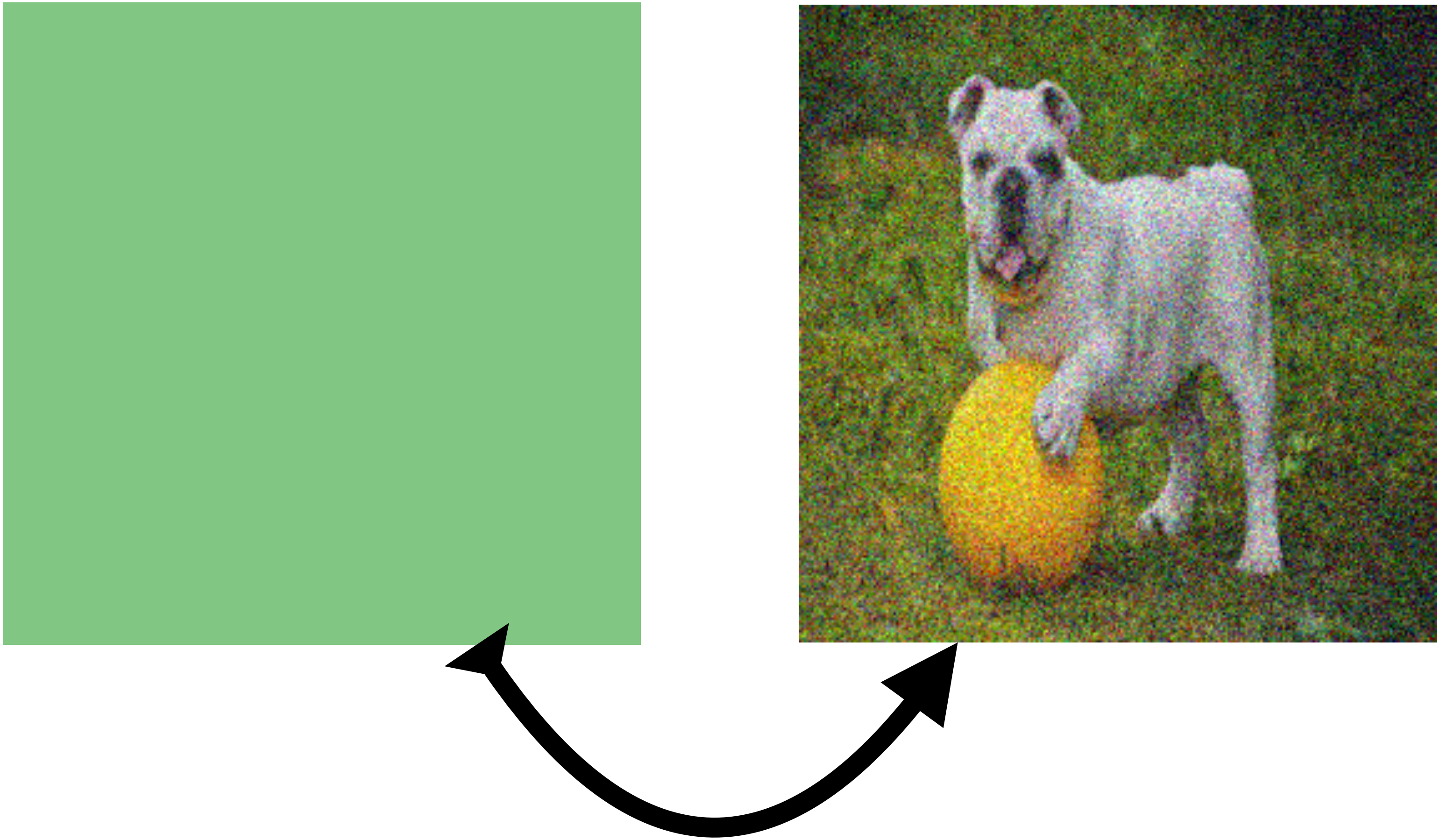
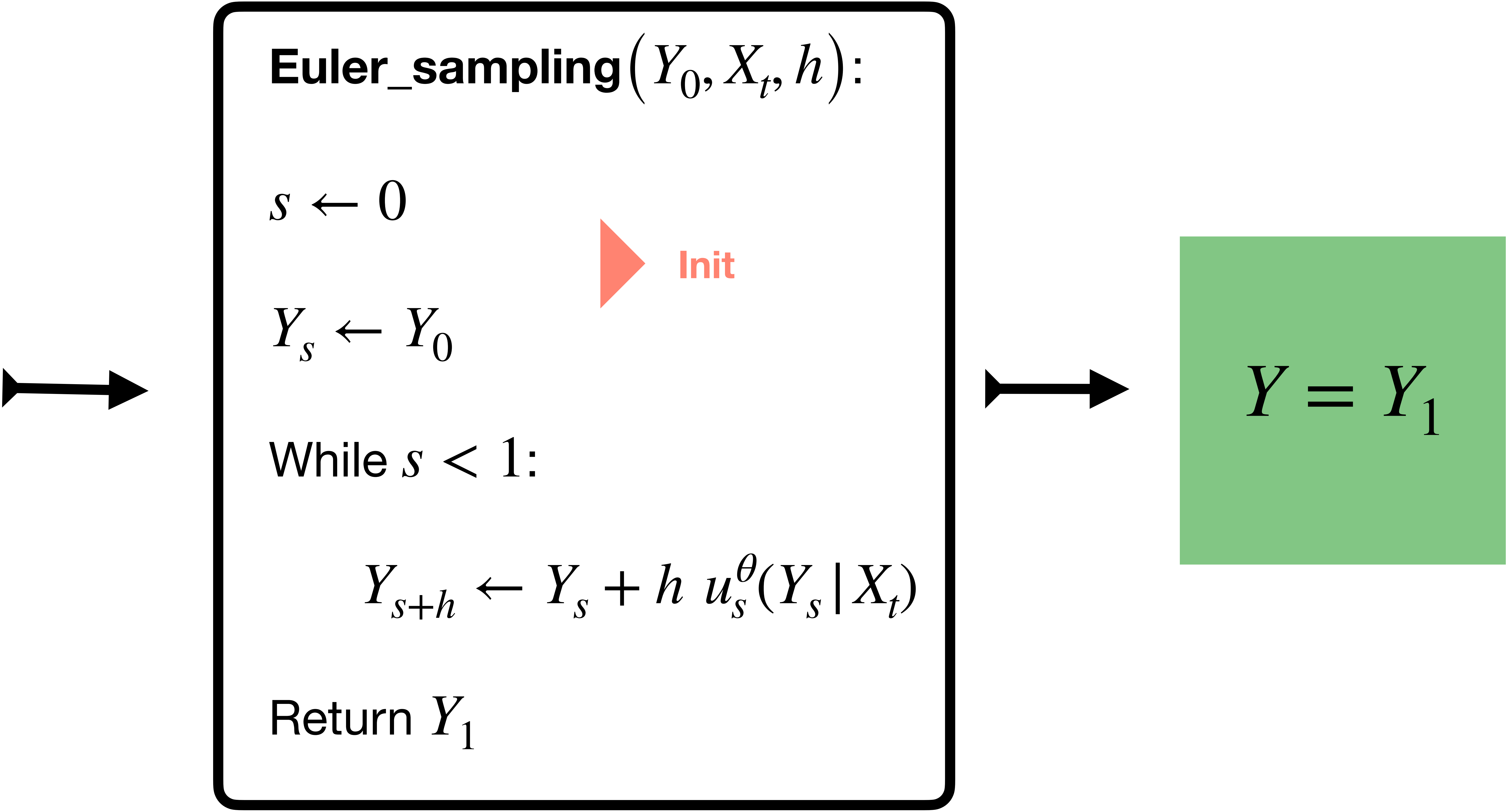
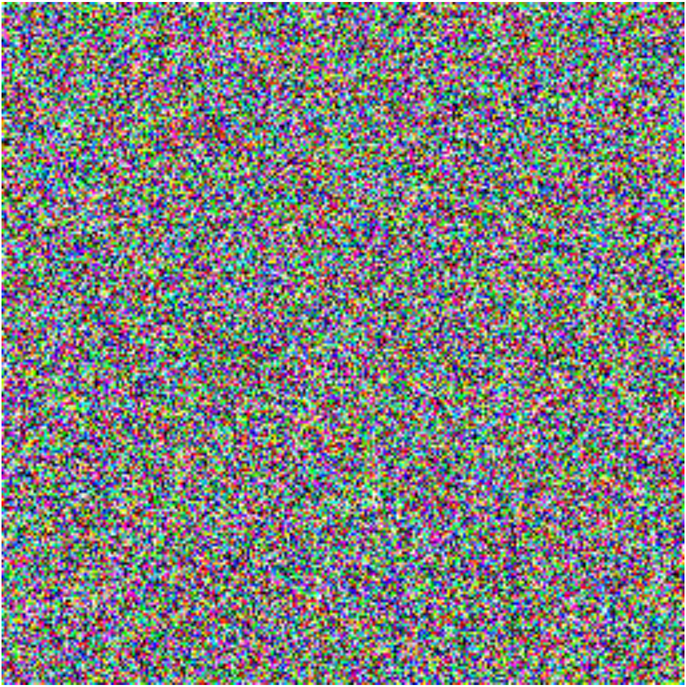
Modeling

$p^{\theta}_{Y|t}\left(Y|X_t\right)$ is naturally modeled with a Flow Matching model $u^{\theta}_{s}(Y_s|X_t)$.



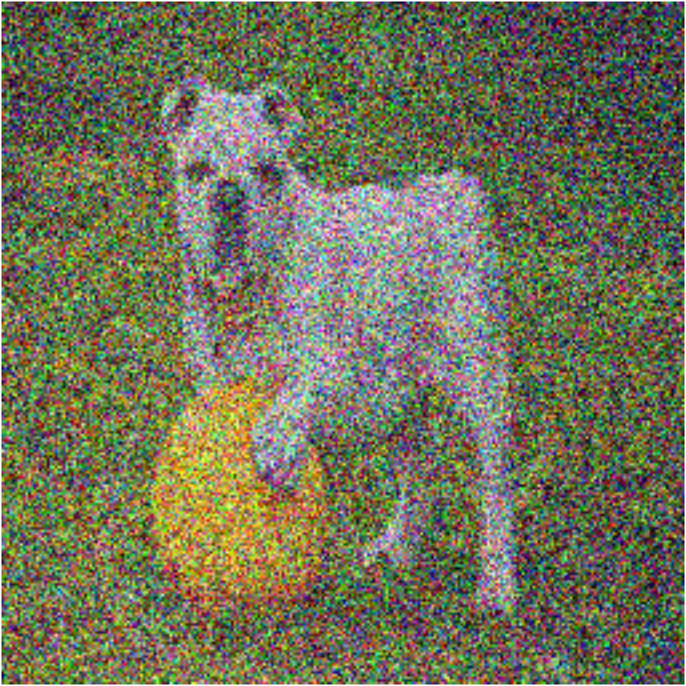
$$X_{t+1} = X_t + \frac{1}{T} Y$$


Euler_sampling(Y_0, X_t, h):
$s \leftarrow 0$
Init
$Y_s \leftarrow Y_0$
While $s < 1$:
$Y_{s+h} \leftarrow Y_s + h\, u_s^{\theta}(Y_s \mid X_t)$
Return Y_1
$Y = Y_1$



$$Y_0 \sim \mathcal{N}(0, I)$$

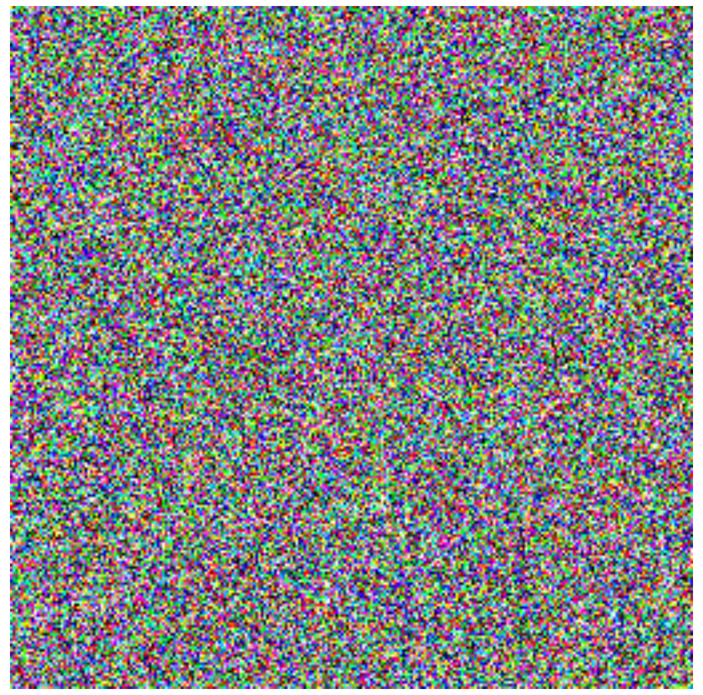
X_t



Modeling

$p^{\theta}_{Y|t}\left(Y\,|\,X_t\right)$ is naturally modeled with a Flow Matching model $u^{\theta}_s(Y_s\,|\,X_t)$.

X_t



$Y_0 \sim \mathcal{N}(0, I)$

Euler_sampling$\left(Y_0, X_t, h\right)$:

$s \leftarrow 0$

$Y_s \leftarrow Y_0$

Init

While $s < 1$:

$Y_{s+h} \leftarrow Y_s + h\; u^{\theta}_s(Y_s\,|\,X_t)$

Return Y_1

$Y = Y_1$

$$X_{t+1} = X_t + \frac{1}{T} Y$$

Modeling

Loss

$$\mathscr{L}(\theta) = \mathbb{E}\left[\|u_s^\theta(Y_s \,|\, X_t) - \dot{Y}_s\|^2\right],$$

where

$s \in [0,1]$,

$Y_s = (1-s)Y_0 + sY$,

$Y_0 \sim \mathcal{N}(0,\, I)$,

X_t, Y - Supervising process