Case Study: iQRL

Dynamics Model but Not Model-based RL? 🤔

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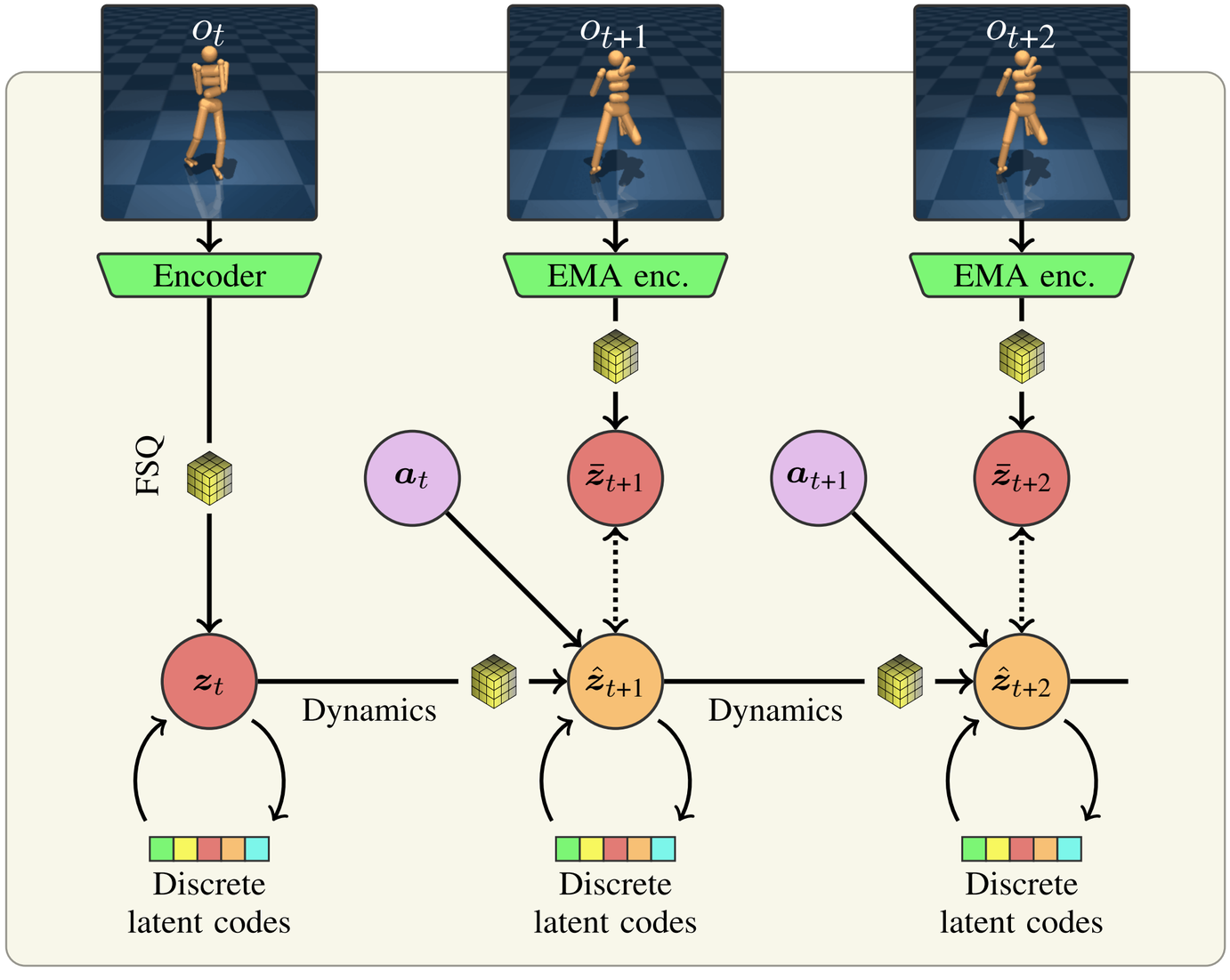
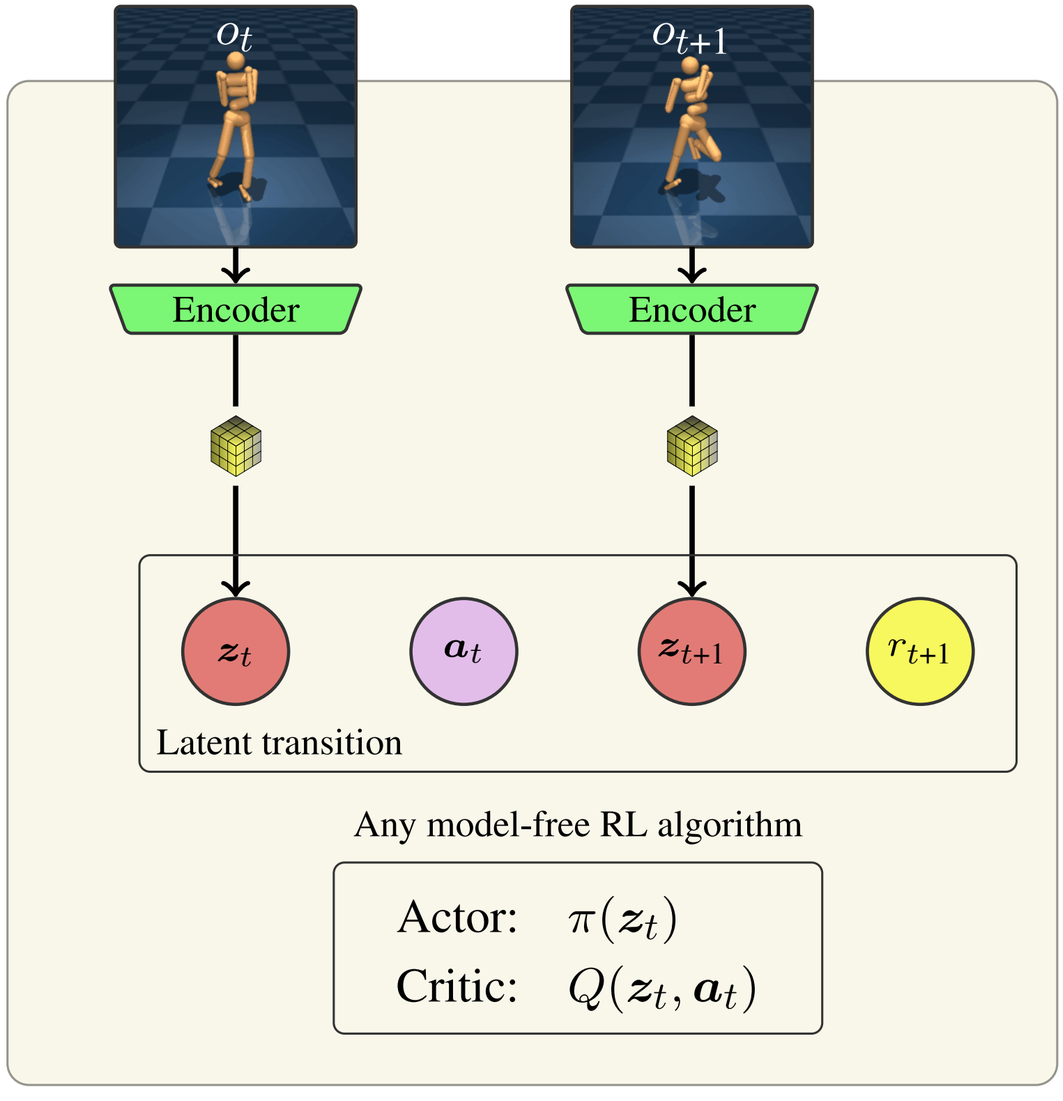

o_t
o_{t+1}
o_{t+2}
Encoder
EMA enc.
EMA enc.
FSQ
a_t
a_{t+1}
$\bar{z}_{t+1}$
$\bar{z}_{t+2}$
z_t
Dynamics
$\hat{z}_{t+1}$
Dynamics
$\hat{z}_{t+2}$
Discrete latent codes
Discrete latent codes
Discrete latent codes


o_t
o_{t+1}
Encoder
Encoder
z_t
a_t
z_{t+1}
r_{t+1}
Latent transition
Any model-free RL algorithm
Actor: $\pi(z_t)$
Critic: $Q(z_t, a_t)$

Scannell et al. (2024). iQRL - Implicitly Quantized Representations for Sample-efficient RL. arXiv:2406.02696.

Observation

Encoder

Quantization

Latent dynamics

Model-free RL in latent space

Use dynamics for representation learning

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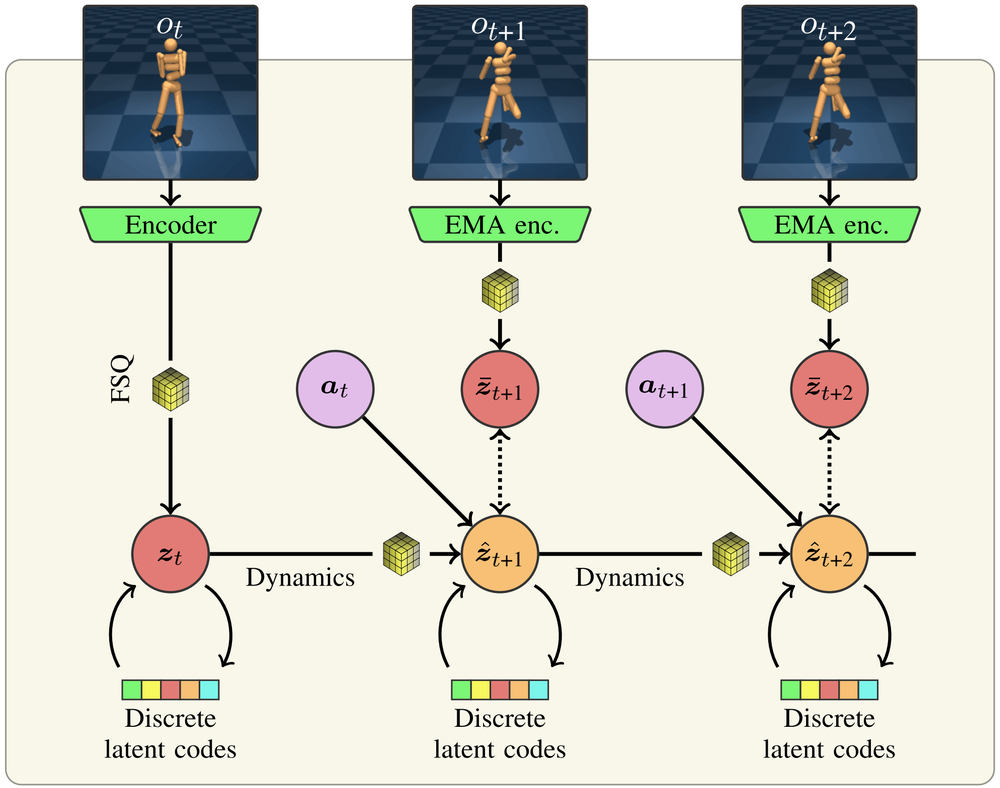
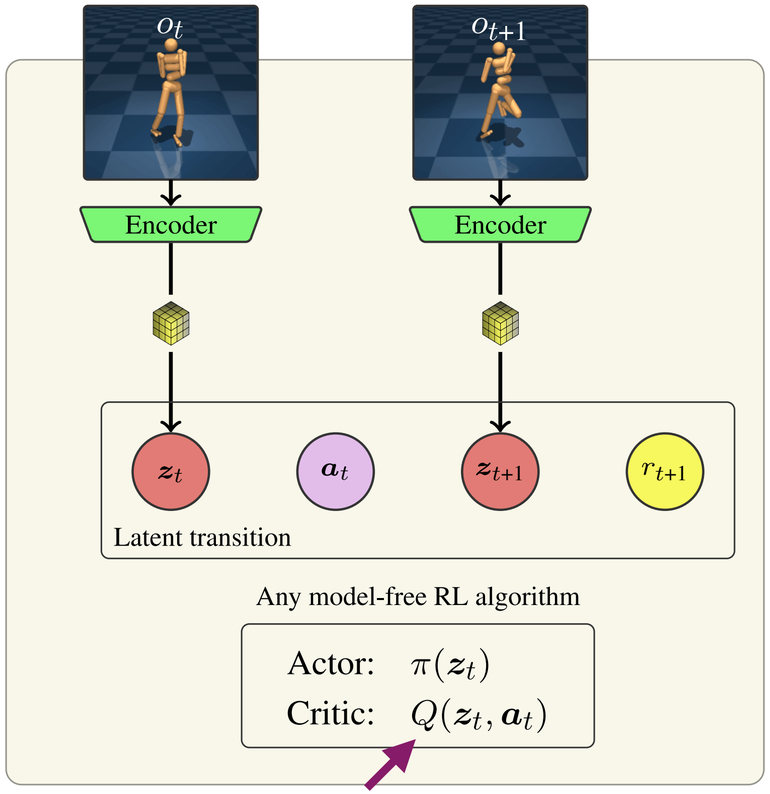
Use dynamics for representation learning





Model-free RL in latent space

Scannell et al. (2024). iQRL - Implicitly Quantized Representations for Sample-efficient RL. arXiv:2406.02696.

Outlook