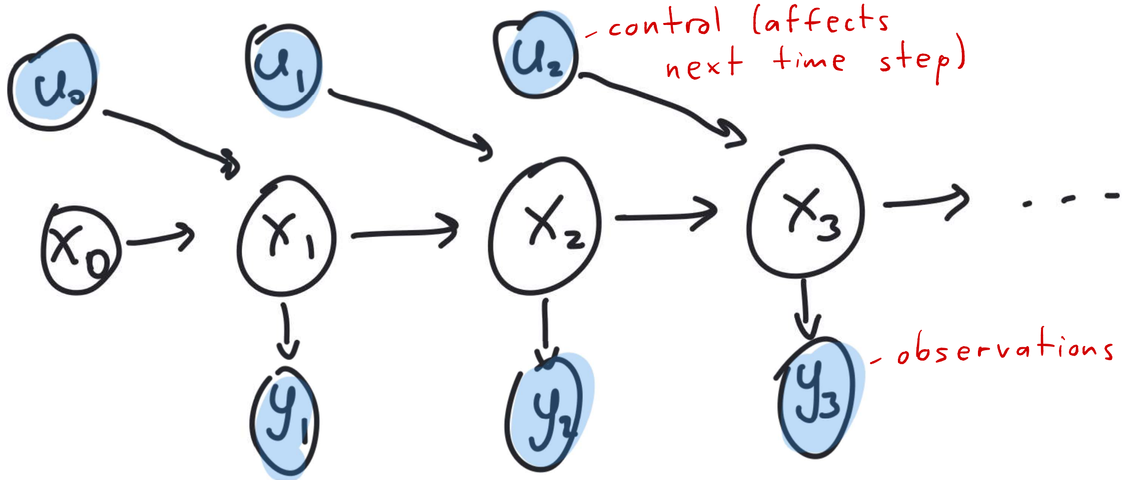
Markov model with observations and controls



Initial Prob. : $p(x_0) = \dots$

Transition Prob. : $p(x_{n+1} | x_n, \underline{u_n}) = \dots$

Emission Prob. : $p(y_n | x_n) = \dots$

$$p(x_{0:n}, y_{1:n} | u_{0:n-1}) = p(x_0) \prod_{t=1}^{n} \underbrace{p(x_t | x_{t-1}, u_{t-1})}_{\text{transition}} \underbrace{p(y_t | x_t)}_{\text{emission}}$$