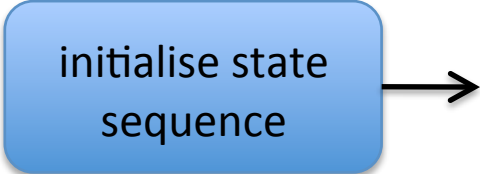$$\hat{\mathbf{x}}_t$$

initialise state sequence

randomly
choose state
vector for all
time points