

$$p(\mathbf{x}_1, \dots, \mathbf{x}_N, \mathbf{z}_1, \dots, \mathbf{z}_N) = p(\mathbf{z}_1) \left[\prod_{n=2}^N p(\mathbf{z}_n | \mathbf{z}_{n-1}) \right] \prod_{n=1}^N p(\mathbf{x}_n | \mathbf{z}_n)$$