Particle filter

$$t = 3$$

Normalise weights

$$W_{3}^{(k)} = \frac{\mathbf{w}_{3}^{(k)}}{\sum_{k'} \mathbf{w}_{3}^{(k')}}$$

$$\begin{pmatrix} \mathbf{x}_{1}^{(1)} & \mathbf{x}_{1}^{(2)} & \mathbf{x}_{1}^{(3)} & \mathbf{x}_{1}^{(4)} & \mathbf{x}_{1}^{(5)} \\ 0/5 & 2/5 & 2/5 & 0/5 & 1/5 \\ \end{pmatrix}$$

$$A_{1}^{(1)} = 2 \qquad A_{1}^{(2)} = 3 \qquad A_{1}^{(3)} = 5 \qquad A_{1}^{(4)} = 3 \qquad A_{1}^{(5)} = 2$$

$$\begin{pmatrix} \mathbf{x}_{2}^{(1)} & \mathbf{x}_{2}^{(2)} & \mathbf{x}_{2}^{(3)} & \mathbf{x}_{2}^{(4)} & \mathbf{x}_{2}^{(5)} \\ 2/5 & 1/5 & 0/5 & 1/5 & 1/5 \\ \end{pmatrix}$$

$$A_{2}^{(1)} = 2 \qquad A_{2}^{(2)} = 4 \qquad A_{2}^{(3)} = 1 \qquad A_{2}^{(4)} = 5 \qquad A_{2}^{(5)} = 1$$

$$\begin{pmatrix} \mathbf{x}_{3}^{(1)} & \mathbf{x}_{3}^{(2)} & \mathbf{x}_{3}^{(3)} & \mathbf{x}_{3}^{(4)} & \mathbf{x}_{3}^{(5)} \\ \end{pmatrix}$$

$$1/5 \qquad 3/5 \qquad 0/5 \qquad 0/5 \qquad 0/5 \qquad 1/5$$