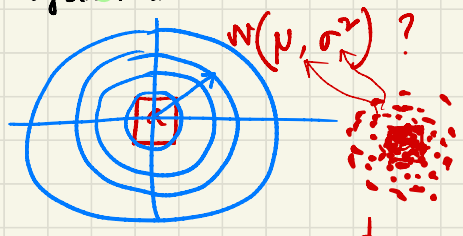


Some other applications of HMM (informal discussion)

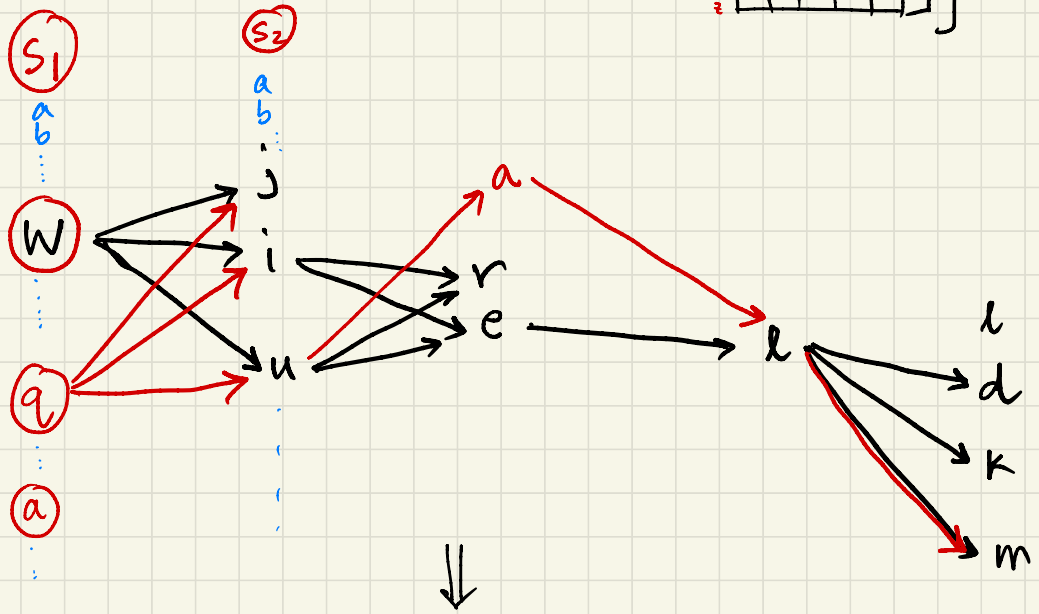
I Auto-correct in smartphone keyboards

whelm	white	quell	qualm
q w e r t y u i o p			
a s d f g h j k l			
↑ z x c v b n m ↵			
123 ☺ space @ . return			



$$P(m_1 | s_1) = P(m_1 = \text{location of } \textcircled{a} \mid s_1 = \begin{bmatrix} a \\ b \\ \dots \end{bmatrix}) = \text{dist. to center of key a}$$

$$P(s_2 | s_1) = P(s_2 = \begin{bmatrix} a \\ b \\ c \\ \dots \end{bmatrix} \mid s_1 = \begin{bmatrix} a \\ b \\ \dots \\ q \\ w \end{bmatrix}) = \text{From an English Dictionary}$$



Decodes to "quell" or "qualm" or "white"...

Similar application in speed recognition

$$P(m_k | s_k) = P(m_k = \text{[phonetic symbols]} \mid s_k = \begin{bmatrix} a' = \text{[waveform]} \\ b' = \text{[waveform]} \\ k' = \text{[waveform]} \\ \vdots \end{bmatrix})$$

$$P(\overline{s_{k+1}} | s_k) = P(s_{k+1} = j' \mid s_k = k') = 0$$