

Vite/bi

$$\max_{x_1 \dots x_t} P(x_1, x_2, \dots, x_t, \underline{x_{t+1}} | e_{1:t+1}) =$$

$$P(e_{t+1} | x_1 \dots \cancel{x_t}, x_{t+1}, \cancel{e_{x_t}}) \quad (3)$$

$$P(x_1 \dots x_t, \underline{x_{t+1}} | e_{1:t})$$

$$P(x_{t+1} | \cancel{x_1} \dots \cancel{x_t}, \cancel{e_{x_t}})$$

$$P(\underline{x_1 \dots x_t} | e_{1:t})$$

$$P(e_{t+1} | x_{t+1}) \max_{x_1 \dots x_t} P(x_{t+1} | x_t) P(x_1 \dots x_t | e_{1:t})$$

$$= P(e_{t+1} | x_{t+1}) \max_{x_t} \left[P(x_{t+1} | x_t) \max_{x_1 \dots x_{t-1}} P(x_1 \dots x_{t-1}, x_t | e_{1:t}) \right]$$

$$\underline{m_{1:t+1} = P(e_{t+1} | x_{t+1}) \max_{x_t} (P(x_{t+1} | x_t) m_{1:t})}$$