

$$P_N(\tau_j \rightarrow \tau_i) \propto \sum_{d \in D_k} \underbrace{P_N(d_l \mid \tau_j)}_{\prod_{\langle s_l, m \rangle \in d_l} \sum_{s_l} P_N(s_l \mid s_l)} \underbrace{F(\tau_i \mid d)}_{\propto P(\tau_i \mid d)^\gamma} \underbrace{P(m \mid s_l, \tau)}_{P(m \mid s_l, \tau)}$$

$$P(\tau \mid d) \propto \underbrace{P(\tau)}_{\text{prior}} \underbrace{P(d \mid \tau)}_{\prod_{\langle s, m \rangle \in d} P(m \mid s, \tau)}$$

$$F(\tau \mid d) \propto P(\tau \mid d)^l, \quad l \geq 1$$

$$P(\tau_j \rightarrow \tau_i) \propto \sum_{d \in D_k} P(d \mid \tau_j) F(\tau_i \mid d).$$

$$P_N(s_a \mid s_l) \propto P(s_a) P_N(s_l \mid s_a)$$

$$P_N(s_l \mid s_l) = \sum_{s_a} P(s_a \mid s_l) P_N(s_l \mid s_a)$$

$$P_N(d_l \mid \tau) = \prod_{\langle s_l, m \rangle \in d_l} \sum_{s_l} P_N(s_l \mid s_l) P(m \mid s_l, \tau).$$

$$P_N(\tau_j \rightarrow \tau_i) \propto \sum_{d \in D_k} P_N(d_l \mid \tau_j) F(\tau_i \mid d).$$

Vagueness

$$P_N(\cdot \mid s_a) \sim N(s_a, \sigma, 0, 99)$$

$$\tau \in [0; 99]$$

$$P(m_1 \mid s, \tau) = \delta_{s \geq \tau} = (1 - P(m_2 \mid s, \tau))$$

SIs

$$P(s_{\forall} \mid s_{\exists \neg \forall}) = \varepsilon$$

$$P(s_{\exists \neg \forall} \mid s_{\forall}) = \delta$$