

Hidden Markov Models

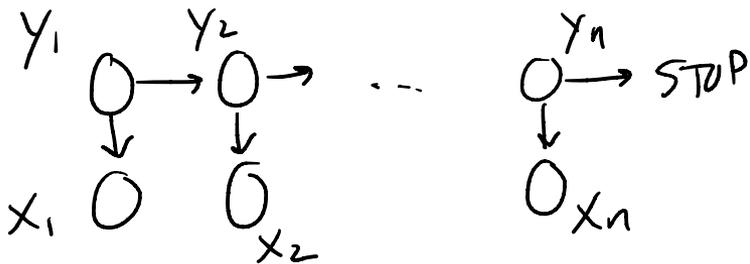
Two steps

Generative sequence model

Tags $y_i \in \mathcal{T}$ words $x_i \in \mathcal{V}$
tags vocabulary

- ① Param estimation
- ② Inference

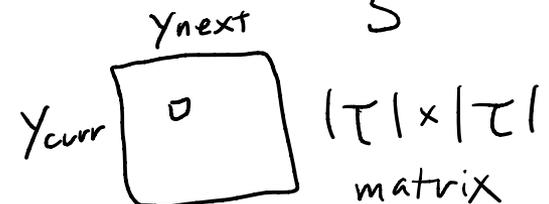
$$P(\bar{y}, \bar{x}) = P(y_1) P(x_1 | y_1) P(y_2 | y_1) P(x_2 | y_2) \dots P(\text{STOP} | y_n)$$



Parameters $P(y_1)$ $|\mathcal{T}|$ -len vector

initial distribution

$P(y_i | y_{i-1})$
transitions



y_i 's form a Markov process
 y_i is conditionally independent of y_1, \dots, y_{i-2} given y_{i-1}

$P(x_i | y_i)$
emissions

