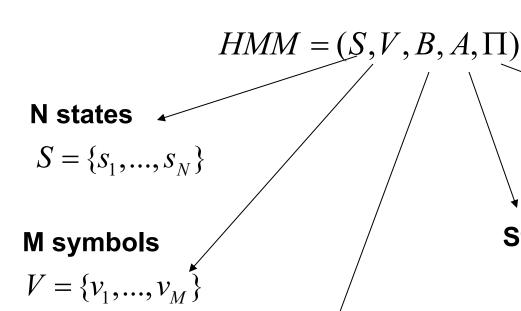
## A General Definition of HMM



## **Initial state probability:**

$$\Pi = \{\pi_1, ..., \pi_N\} \sum_{i=1}^N \pi_i = 1$$

$$\pi_i : prob \ of \ starting \ at \ state \ s_i$$

## **State transition probability:**

$$A = \{a_{ij}\} \quad 1 \le i, j \le N \quad \sum_{j=1}^{N} a_{ij} = 1$$
$$a_{ij} : prob of going \ s_i \rightarrow s_j$$

## **Output probability:**

$$B = \{b_i(v_k)\} \qquad 1 \le i \le N, \ 1 \le k \le M \quad \sum_{k=1}^{M} b_i(v_k) = 1$$

 $b_i(v_k)$ : prob of "generating"  $v_k$  at  $s_i$