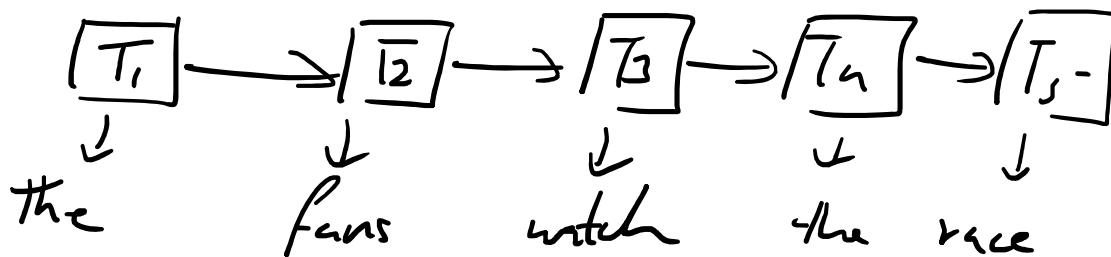


→ Viterbi Algorithm:

The fans watch the race
 (DT) (NN VB) (NN VB) (DT) (NN VB)

→ HMM



$$\text{Max}_{T_1, T_2, T_3, T_4, T_5} P(T_1, T_2, T_3, T_4, T_5, \text{the}, \text{fans}, \text{watch}, \text{the}, \text{race})$$

$$\rightarrow \text{Max}_{T_i} \underbrace{\prod_{k=1}^5 P(T_k | T_{k-1})}_{\text{Transitions}} \cdot \underbrace{\prod_{k=1}^5 P(W_k | T_k)}_{\text{Emissions}}$$

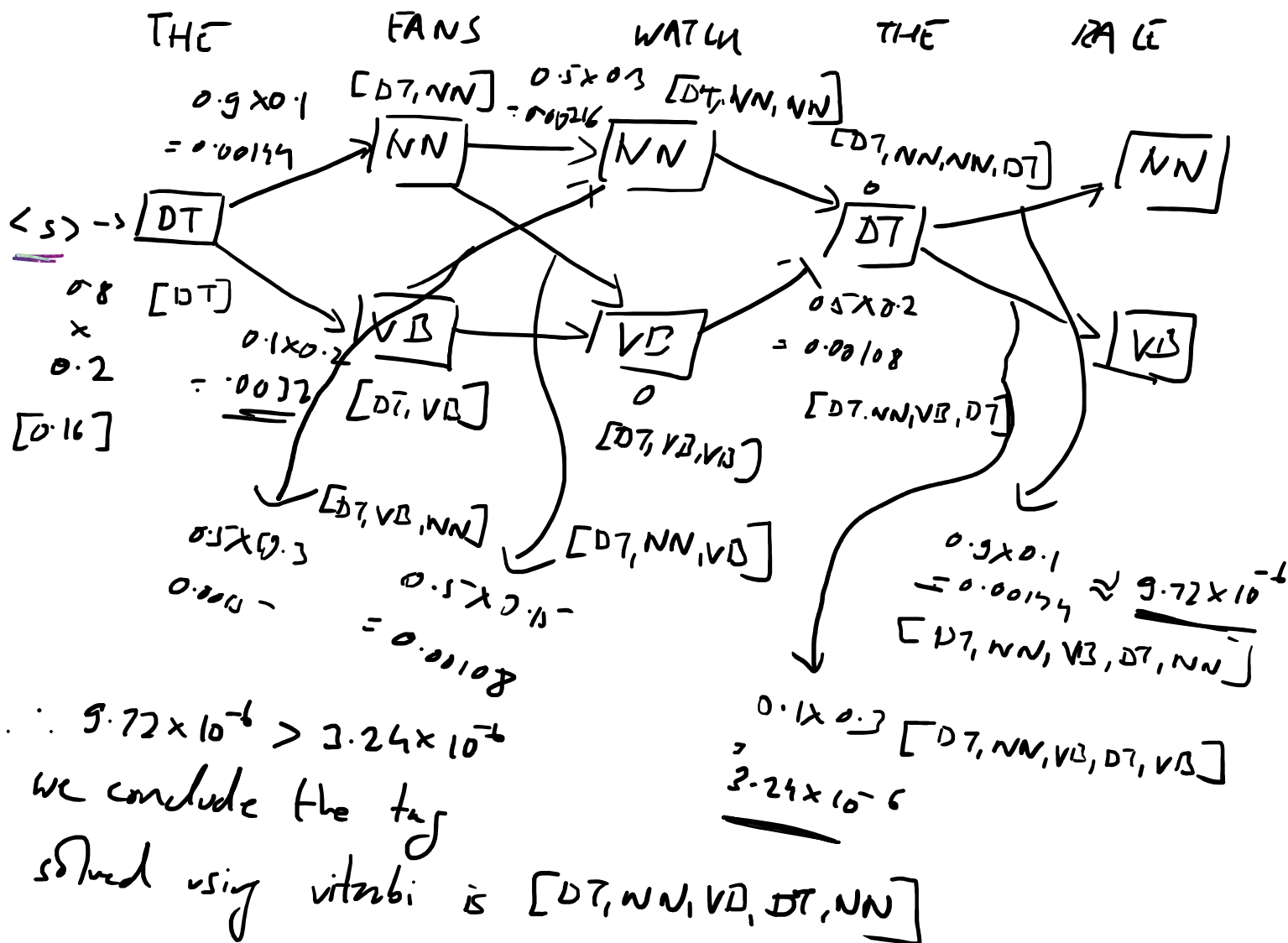
→ Transition Table

	DT	NN	VB
<s>	0.8	0.2	0
DT	0	0.5	0.1
NN	0	0.5	0.5

<u>NN</u>	<u>0</u>	<u>0.5</u>	<u>0.5</u>
<u>VB</u>	<u>0.5</u>	<u>0.5</u>	<u>0</u>

→ Emissions Table

	<u>THE</u>	<u>FANS</u>	WATCH	RACE
<u>DT</u>	<u>0.2</u>	0	0	0
<u>NN</u>	0	<u>0.1</u>	<u>0.3</u>	<u>0.1</u>
<u>VB</u>	0	0.2	<u>0.15</u>	<u>0.3</u>



solved using vitrabi is $[DT, NN, VD, DT, NN]$

→ Brute force (P^L) } Time
 Vitrabi: $O(L \times P^2)$ } Complexity

$P \sim pos \text{ to } j$
 $L \sim length$

