PRON   DET   ADJ   NOUN   .   ADV   .

$\begin{array}{ccccccc} \text{①} & \text{②} & \bigcirc & i & \bigcirc & \bigcirc & n \end{array}$

$x(x_1, y_1)$ ■   ■   ■ $x(x_i, y_i)$ ■   ■   ■ $x(x_n, y_n)$

What   a   productive   day   .   Not   .

(a) Logistic Regression Model

PRON   DET   ADJ   NOUN   .   ADV   .

$s(y_1)$ $t(y_{i-1}, y_i)$ $t(y_i, y_{i+1})$ $e(y_n)$

S ■ ① ■ ② ■ $\bigcirc$ ■ i ■ $\bigcirc$ ■ $\bigcirc$ ■ n ■ E

$x(x_1, y_1)$ ■   ■   ■ $x(x_i, y_i)$ ■   ■   ■ $x(x_n, y_n)$

What   a   productive   day   .   Not   .
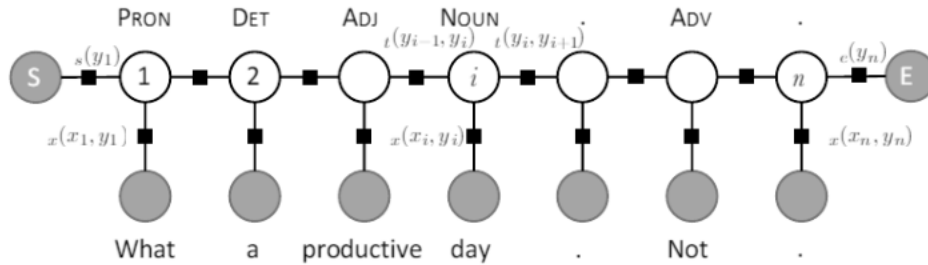
(b) Conditional Random Field Model

It seems that CRF works better and that's what we expected, in log_reg we are using just each word for finding out its related tag but in crf we are looking for whole thing as sequence and each tag will have an influence on other part tags in terms of scores. So it would have a notion of complete sentence for finding and adding tags to each word. But in terms of computation log_reg is doing better. And also CRF does not work with unknown words, i.e. with words that were not present in training data sample.