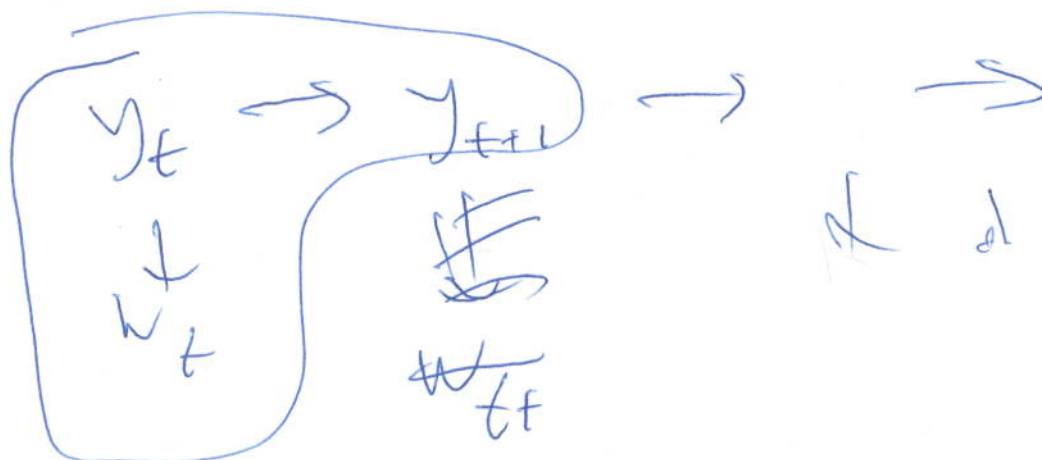
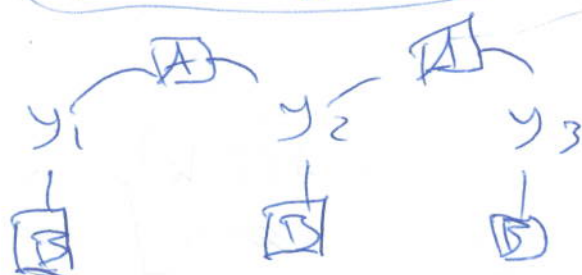


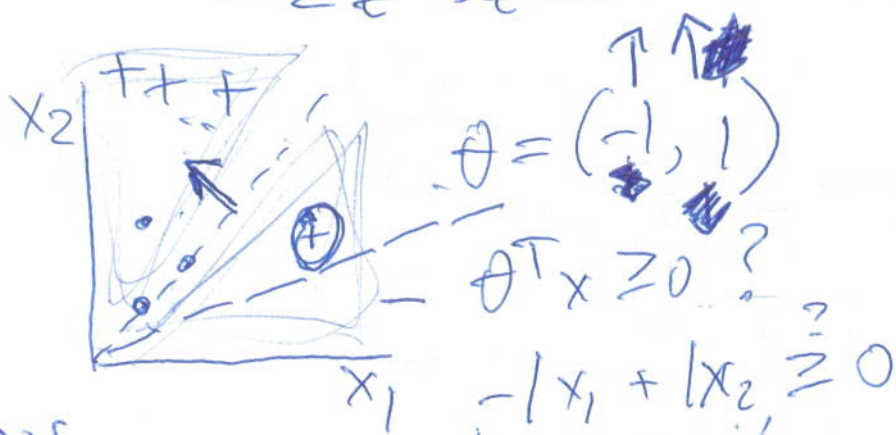


$$f_t(y_t, y_{t+1}, w_t)$$

$$\theta^T f(x, y) = \sum_t \theta^T f_t^{(B)}(x_t, y_t) + \sum_{t=2}^T \theta^T f_t^{(A)}(y_{t-1}, y_t)$$



$$= \sum_t B_t(y_t) + \sum_{t=2}^T A(y_{t-1}, y_t)$$



$y = \text{POS}$
 misclassified as NEG
 update $\theta = \theta + x$
 one of the signs was
 wrong in lecture

$x_2 > x_1 \Rightarrow \text{POS}$

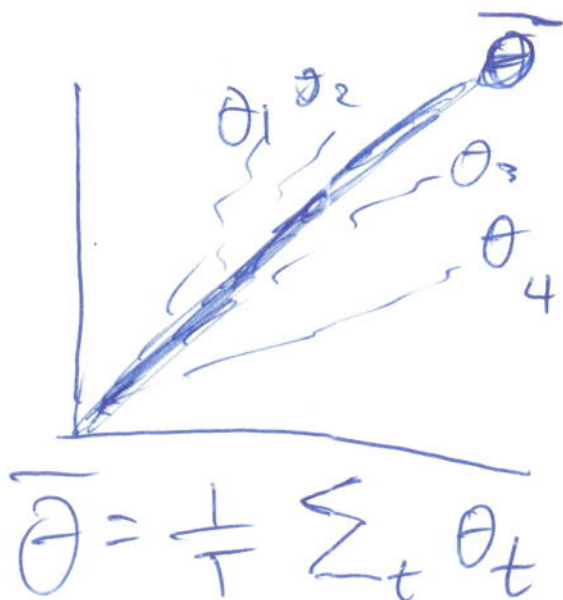
$$\theta_1 x_1 + \theta_2 x_2 = 0$$

$$\theta_2 x_2 = -\theta_1 x_1$$

$$x_2 = -\frac{\theta_1}{\theta_2} x_1$$

Decision boundary

$$\theta^T x = 0$$



Averaging

$$\begin{aligned} \theta_5 &= (-, -, -, \overset{4}{-}, \dots) \\ \theta_6 &= (-, -, -, \overset{4+1}{-}, -, -, \dots) \\ \theta_7 &= (\end{aligned}$$

$$\theta_5 + \theta_6 + \theta_7$$

Dense sums
are slow