机器学习复习9

2022年7月8日 星期五 10:35

Online Learning

- $g(z)=\begin{cases}1 & z\geq 0\\ -1 & z<0\end{cases}$

predict: $\begin{cases}\theta:=\theta+yx & (h_\theta(x)\neq y)\\ \theta\text{不变} & (h_\theta(x)=y)\end{cases}$

- 定理：Block and Novikoff

if sample could seperate, then the geomitry distance will be at least γ, $\|x\|\leq D$, the mistaks $\leq(\frac{D}{\gamma})^2$

$(x^{(i)})^T\theta^{(k)}y^{(i)}\leq 0$

$(\theta^{(k+1)})^Tu=(\theta^{(k)})^Tu+y^{(i)}(x^{(i)})^Tu$

$\geq(\theta^{(k)})^Tu+\gamma$

then $(\theta^{(k+1)})^Tu\geq k\gamma$

$\|\theta^{(k+1)}\|^2=\|\theta^{(k)}\|^2+\|x^{(i)}\|^2$

$\leq\|\theta^{(k)}\|^2+D^2$

$\|\theta^{(k+1)}\|^2\leq kD^2$

$\sqrt{k}D\geq k\gamma$