Delta Rule National Wilder Dataset: 1 0 1 2 0 0 0 0 1 1 5 to plane Wilghat - 2 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Q / Part No.	Rough Work
Dalaset: 1 0 1 2 0 unit scepture 0 0 0 0 1 1 2 0 0 weight - 2 2 1 2 nd 50 mple = b_1 (N_a + N_1 W_1 + N_2 + N_3 W_3 b_1 W_3 + N_3 W_3 + N_4 W_4 + N_3 W_3 b_1 W_4 + N_4 W_4	Delta Rule	
weight $\begin{bmatrix} 2 & 2 & 1 \\ 2 & 2 & 1 \end{bmatrix}$ $\begin{bmatrix} 2 & 1 & 3 & 3 & 3 & 3 & 3 & 3 & 3 & 3 & 3$	Datasit: 10 1 2	O unit scapfun
$ \begin{array}{c} = b_{1} (\omega_{0} + n_{1} \omega_{1} + n_{2} \omega_{2} + n_{3} \omega_{3} + n_{4} \omega_{1} + n_{4} \omega_{1} + n_{4} \omega_{2} + n_{4$	W1 W2 W3	71 7/0 1
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$		2 not soumple
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	= 1(2) + 1(-2) + 0(2) + 1(1)	(2) + 0(-2)+0(2)+0(1)
$y = y_{1} (y - y)_{0} b (y - y)_{1} (y - y)_{1} $		TX= 0.2
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	for the state of t	(y-j)-13
$W_{0} = W_{0} + \frac{1}{2} \times (y_{1} - \hat{y_{1}}) \cdot b = 2 + 0 \cdot 2(-1) = 1 \cdot 2$ $W_{1} + \frac{1}{2} \times (y_{1} - \hat{y_{1}}) \cdot \eta_{1} = 2 + 0 \cdot 2(-1) = -2 \cdot 2$ $W_{2} + \frac{1}{2} \times (y_{1} - \hat{y_{1}}) \cdot \eta_{2} = 2 + 0 \cdot 2(-1) = 0 \cdot 8$ $W_{3} + \frac{1}{2} \times (y_{1} - \hat{y_{1}}) \cdot \eta_{3} = 1 + 0 \cdot 2(-1) = 0 \cdot 8$ $W_{0} = \frac{1 \cdot 2}{2 \cdot 2}$ $W_{0} = \frac{1 \cdot 2}{2 \cdot 2}$	- = 0 ×0 = 0 0×0 = 0 0 × 0 = 0	0 * 0 = 0
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$		
W ₃ RW = W ₃ + \(\frac{1}{2}\) \(\frac{1}{2}	W, + 4 X (4;-4;), 7; = -	1+02(9)=2
000	W3 NEW = W3 + E OX (y1 - y1), 713 = 1	1+0.2(-1) = 0.8
$\frac{\omega_1}{\omega_2} = \frac{2}{2}$	$\frac{\omega_0}{\omega_2} = \frac{2}{2}$	

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Delta Rule: $d, \mathcal{L}(y-\hat{y}), f'(aut), \mathcal{H}_1$ Suppose no act function. $(y-\hat{y}), \mathcal{H}_1$ cost function: $\frac{1}{2}(y-\hat{y})^2$ $\frac{dc}{dw_0} = \frac{d(\frac{1}{2}(y-\hat{y})^2)}{dw_0}$ now; $\hat{y} = w_0b + w_1\mathcal{H}_1 + \cdots$ so y'' has many more variables and not only we

=> Therefore we will take its Partial durivative

=> Your cost is not directly dependent on wo. Cost depends on 4 7 This is call

Cost depends on \hat{y} This is called \hat{y} depends on w_0 Chain rule

Therefore: dc: dc. dý dwo dy dwo hets take the first term, dc = 2 = (y-y) > since j has menny variables dy diff hence taking its partial derivative $=\frac{1}{2}\cdot2\left(y-\hat{j}\right)^{2}\left(\frac{dy}{dy}-\frac{d\hat{y}}{d\hat{y}}\right)$ $(y-\hat{y})(0-1)$ - (y-ý)

Therefore:
$$\frac{dC}{dw_0}$$
: $\frac{dC}{dw_0}$. $\frac{d\hat{y}}{dw_0}$

Lets take the first team,

 $\frac{dc}{d\hat{y}} = \frac{d}{d} \frac{(y-\hat{y})^2}{(y-\hat{y})^2}$ \Rightarrow since \hat{y} has meny variables have taking its partial derivative.

 $\frac{d\hat{y}}{d\hat{y}} = \frac{d}{d\hat{y}} \frac{(y-\hat{y})^2}{(y-\hat{y})^2} \left(\frac{dy}{dy} - d\hat{y}\right)$
 $\frac{d\hat{y}}{dy} = \frac{d\hat{y}}{dy}$
 $\frac{d\hat{y}}{dy} = \frac{d\hat{y}}{dy}$

So,
$$\frac{dc}{dy} = -(y-\hat{y})$$

Now lets sei, $\frac{d\hat{y}}{dw} = \frac{\partial (w_0b + w_1x_1 + -)}{\partial w_0}$

$$= \frac{\partial (w_0b_0)}{\partial w_0} + \frac{\partial (w_1x_1)}{\partial w_0}$$

$$= 1 \quad \text{Sinu bias is always} = \frac{\partial (y-\hat{y})}{\partial w_0} \cdot \frac{\partial (y-\hat{$$

for weight update the equiation is:

$$w_0 - x_i \frac{dc}{dw}$$
 $w_0 - (-(y-\hat{y}), x_i)$
 $w_0 + \lambda(y-\hat{y}), x_i$