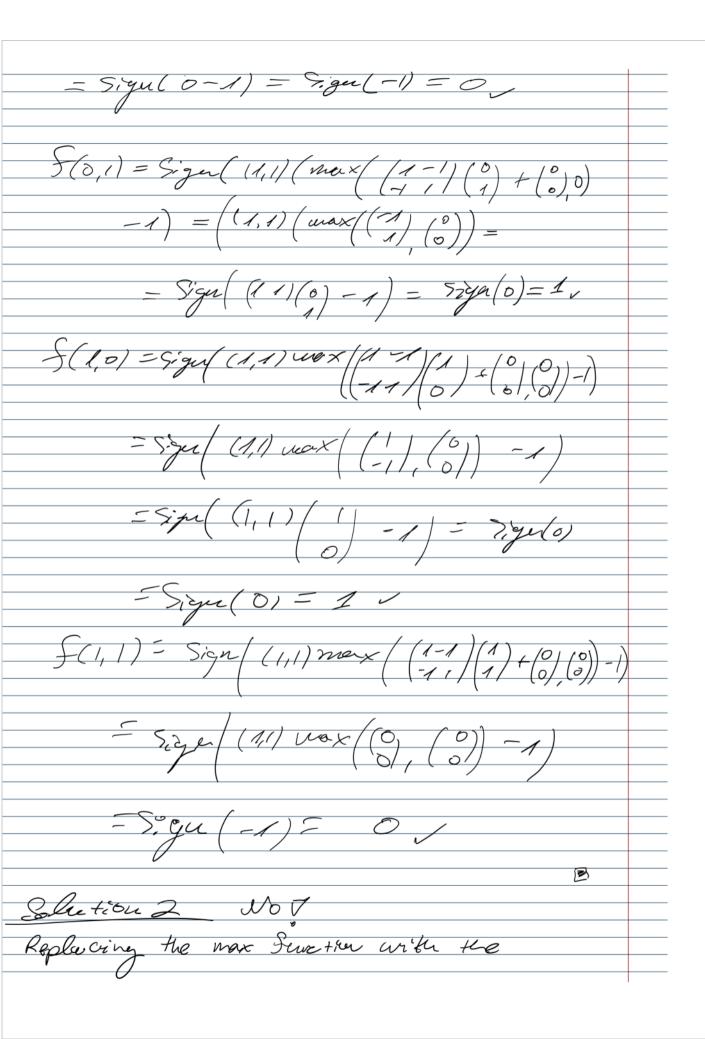
HW1_316228022_316539535

15:08 2024 ינואר 26יום שישי

 $=\frac{2^{2i}}{2^{2i}}=\frac{\text{Softmax}(2)_{ii}}{2^{2i}}$ Solution 2: C=Z: ZER2 => Z = (Z, Z2) => $Soletiax_{(i)} = \underbrace{e^{2i} \quad e^{-2i}}_{0^{2i}+e^{2i}} = \underbrace{e^{-2i}}_{0^{2i}}$ $= \underbrace{\frac{2i-2j}{2i-2j-2j-2j-2}}_{2i-2j-2j-1} \underbrace{\frac{2i-2j-2j-2}{2i-2j-2j-2}}_{1+e^{-x}} \underbrace{\frac{2i-2j-2j-2}{2i-2j-2j-2}}_{1+e^{-x}} =$ = 1 = Signoid(x) $1 + 0^{-}$ W? An Alternative to Signoid (xs)
Which also maps from R - [0,1] ŽS. $g(x) = \frac{1}{2} \left(\frac{tgh(x)}{1+1} \right)$ where $tgh(x) = e^{x} - e^{-x}$

M $\mathbf{Q2}$ Let $x \in \{0,1\}^2$ be an input vector. Consider the following model (scalar function): $f(\mathbf{x}) = \mathbf{w}^T \mathbf{h} + b_2$ $\mathbf{h} = max(U^T\mathbf{x} + \mathbf{b}_1, 0)$ Where $U \in \mathbb{R}^{2 \times 2}$, $\mathbf{b}_1 \in \mathbb{R}^2$, $\mathbf{w} \in \mathbb{R}^2$, $\mathbf{b}_2 \in \mathbb{R}$, and the max is taken element-wise. Suppose we would like to represent with f(x) the XOR function, defined as: XOR(0,0) = 0,XOR(0,1) = 1,XOR(1,0) = 1,XOR(1,1) = 0,using the rule $sign(f(\mathbf{x}))$, that is, the answer is 1 if $f(\mathbf{x}) \geq 0$ and 0 if $f(\mathbf{x}) < 0$. 1. Find a suitable set of parameters for this task. A guess is fine, but show that indeed it solves the above 2. Will it be possible to represent the XOR function if we replace the max function with the identity function (i.e., $h = U^T x$)? If so, show how. If not, explain why not. Solution 1 Pavameters Sat Than Sign (Wh+ bz) (0,0)+(0,0),



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$f(x) = w^{T}(U^{T}x) + b_{z} = (Uw)^{T}x + b_{z}$	
S(x) is livear Mill XOR LOESWY.	
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