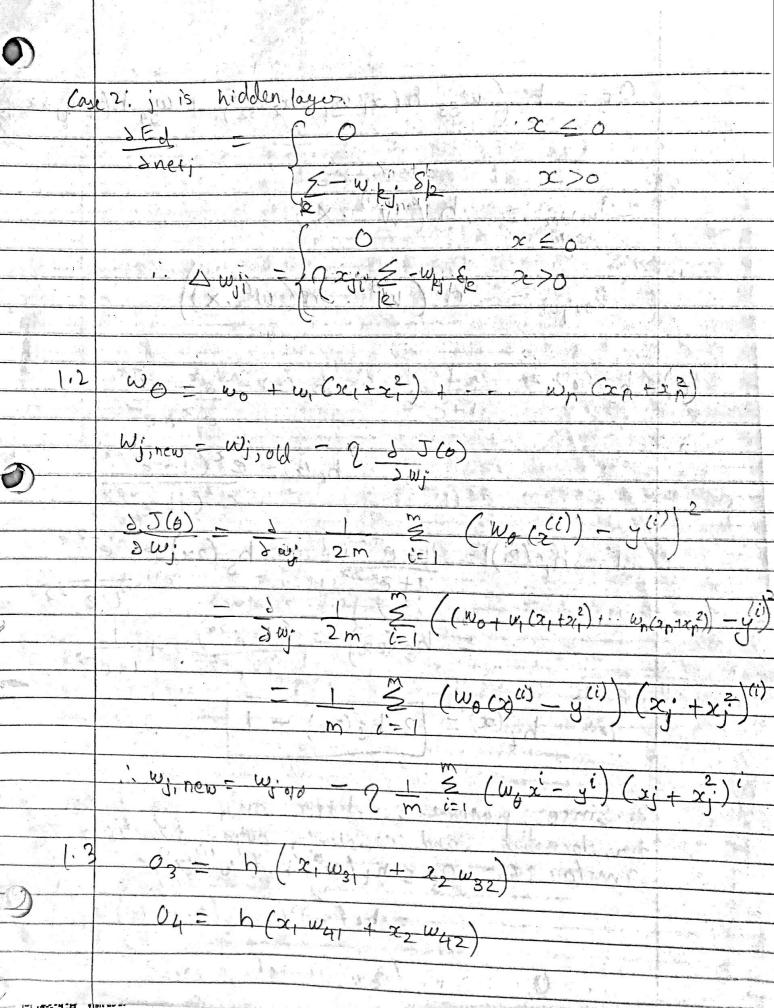
Andrew Su

CS 4375 Assignment 2: NN 5 (tp-0p)2 Ineli-1- (tanh(2))2 Cose 1: output uvit!

: \( \mu\_{ji} = - \lambda \lambde{\text{Ed}} = \lambda \lambde{\text{(4j-oj)(1-oj)}} \) \( \text{xii} \) Cose 2: / j is hidden layer! 3Ed - 2 - 8 k mp: (1-0;2) drel; 100 : Dwis - 1 (1-0;2) Z & wks 2; 11 ) Relv(2)= max(0,x) = ( 0) x 20 = 0; (2 2)0 <u>δοί</u> = ) Ο 1, 2 ≤ ο 1 1 2020 (-1) Cosel: Output unil: )-(tj-0;) x>0 Dwii = 10 ~ X < 0 (-n (6; -o;) x;; x>0



05 = h ( w 53 h ( x1 w31 + x2 w32) + w 54 h (x1 w41 + x2 w) h (W1).x h (w(2), h (w(1), x) Ooutput 1+e-2 he(20) - 100 - 1000  $h_{\ell}(x) = \frac{e^{2}(1-e^{-2x})}{e^{2}(1+e^{-2x})}$  $h_{\ell}(x) = \frac{1 - e^{-2x}}{1 + e^{-2x}} = h_{s}(2x) - e^{-2x}$   $\frac{1}{1 + e^{-2x}}$ - (I+e-2x)  $h_{+}(x) = |2 h_{s}(2x) - 1$ ... Since narameters differ only by linear transformation and constants output functions are similar: Ex- 05 = he (was he (was)) = pt (my (5.p2 (3.m (x)) 1 ]] 0= = 2 hs (2 w/2) (2 · hs (2·w/2))

 $(\overline{w}) = \frac{1}{2} \underbrace{\leq \left( \frac{1}{kd} - o_{kd} \right)}_{2 \text{ dep ke outputs}} \underbrace{+ \left( \frac{1}{kd} - o_{kd} \right)}_{i,j} + \underbrace{+ \left( \frac{1}{kd$ Q: 4.16 = -7 (JEd + 2 V W;i)  $\frac{1}{2} \Delta w_{i} = \frac{1}{2} \left( (\pm i - \alpha_{i}) \sigma_{i} (1 - \alpha_{i}) x_{i} + 2 Y w_{i} \right)$  $\Delta w_{ji} = -\left(\left(S_{j,2j_{i}} - 2 \vee w_{ji}\right)\right)$ Hidden whom & = 01 (1-0) & 8 k w/s