**ECE4870/7870 CS 4770/7770 F’18 Computer Assignment 1 Part A Due 9/27/2018**

**Backpropagation Training of a MLP**

Part A:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| |  |  |  |  |  | | --- | --- | --- | --- | --- | | Hidden layer  weights | | **From Input Node** | |  | | *x1* | *x2* | *x3* | | **To Hidden Node** | *w1(1)* | 0.6774 | -1.1052 | 0.1887 | | *w2(1)* | 0.0575 | 1.1930 | -0.8888 | | *w3(1)* | 0.8028 | -0.0078 | -0.8288 | | *w4(1)* | 0.1111 | 0.0323 | -0.6712 | | *w5(1)* | 0.2410 | 0.2471 | -0.8494 | | *w6(1)* | 0.1449 | 0.98400 | 0.4096 | | *w7(1)* | 1.0844 | -0.3180 | -0.0485 | | *w8(1)* | -0.3930 | 0.3843 | -0.5434 | | *w9(1)* | -0.5579 | 0.9900 | -0.4020 | | *w10(1)* | 1.8539 | -0.3022 | -0.4747 | |  | *w11(1)* | 0.6847 | -0.1959 | 0.6786 | | |  |  | | --- | --- | | Hidden layer biases | | | **Node** | **Bias** | | *b1(1)* | -1.1379 | | *b2(1)* | 0.9703 | | *b3(1)* | 0.1954 | | *b4(1)* | -0.5335 | | *b5(1)* | -0.9396 | | *b6(1)* | -0.6708 | | *b7(1)* | -1.0168 | | *b8(1)* | -1.1715 | | *b9(1)* | -0.8475 | | *b10(1)* | 1.8183 | | *b11(1)* | -0.5408 | | |  |  | | --- | --- | | Output biases | | | **Node** | **Bias** | | *b1(2)* | -0.3109 | | *b2(2)* | 0.1476 | |

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| Output layer  weights | | **From Hidden Node** | | | | | | | | | | |  | |
| *y1(1)* | *y2(1)* | *y3(1)* | *y4(1)* | *y5(1)* | *y6(1)* | *y7(1)* | *y8(1)* | *y9(1)* | *y10(1)* | *y11(1)* | |
| **To Output Node** | *w1(2)* | 0.5285 | -0.4296 | 0.1153 | -0.0738 | 0.1611 | 0.3930 | 0.7799 | 0.1488 | 0.0878 | -1.0846 | 0.3344 | |
|  | *w2(2)* | -0.6087 | 0.4464 | -0.0413 | -0.0135 | -0.0484 | -0.1473 | -0.3437 | 0.1446 | -0.1810 | 0.8895 | -0.1192 | |

**Sum of Squared Errors:** 0.2617