Homework 4 Appendix

**3 Layer NN with a hidden layer with 3 perceptron’s**

**Encoded Data**

In the following tables each row represents a number (passed in in position encoding scheme) and each column represents the encoded representation at hidden layer (i)

**Iteration 1 Hidden Layer Values**

|  |  |  |  |
| --- | --- | --- | --- |
| 0 | 9.82E-07 | 0.971275806 | 0.415780276 |
| 1 | 0.000451518 | 0.189530179 | 0.92294395 |
| 2 | 0.999999762 | 0.159094632 | 0.868339539 |
| 3 | 4.49E-07 | 0.720903873 | 4.57E-07 |
| 4 | 0.370553643 | 0.999999642 | 0.93949908 |
| 5 | 1.80E-07 | 7.91E-08 | 0.405778795 |
| 6 | 0.999994278 | 0.268657297 | 1.15E-07 |
| 7 | 0.999999642 | 0.716977835 | 7.60E-06 |
| 8 | 0.999996781 | 0.698910534 | 0.999999881 |
| 9 | 0.96739006 | 9.52E-08 | 0.349695057 |
| 10 | 0.406056374 | 0.999999523 | 1.81E-07 |
| 11 | 0.442889631 | 6.74E-08 | 1.07E-06 |
| 12 | 6.78E-05 | 0.265605778 | 2.53E-07 |
| 13 | 0.436985642 | 1.70E-06 | 0.999150276 |
| 14 | 0.999999762 | 0.999999881 | 0.453130335 |
| 15 | 2.91E-07 | 0.639459372 | 0.999987602 |
|  |  |  |  |

**Iteration 2 Hidden Layer Values**

|  |  |  |  |
| --- | --- | --- | --- |
|  | 0 | 1 | 2 |
| 0 | 0.312232733 | 2.62E-07 | 0.838560343 |
| 1 | 0.999999046 | 0.55320245 | 5.66E-08 |
| 2 | 9.75E-08 | 2.31E-07 | 0.510882139 |
| 3 | 5.03E-07 | 0.821543217 | 0.946397185 |
| 4 | 0.999999881 | 0.659484029 | 0.689773321 |
| 5 | 0.674185991 | 0.319361717 | 0.999999762 |
| 6 | 0.51156199 | 2.32E-07 | 4.33E-08 |
| 7 | 1.37E-07 | 0.588231504 | 4.98E-08 |
| 8 | 0.505726099 | 0.999999881 | 0.999999046 |
| 9 | 0.999993801 | 0.140165254 | 0.152669877 |
| 10 | 0.810477078 | 0.999999762 | 0.270210117 |
| 11 | 1.68E-07 | 0.991500735 | 0.37566185 |
| 12 | 4.40E-07 | 0.351857066 | 0.999999523 |
| 13 | 0.890445948 | 2.40E-07 | 0.566997588 |
| 14 | 0.342512369 | 0.926691711 | 9.74E-07 |
| 15 | 0.045016259 | 0.131969258 | 0.0803608 |

**Iteration 3 Hidden Layer Values**

|  |  |  |  |
| --- | --- | --- | --- |
| 0 | 0.452043444 | 6.19E-07 | 0.998674393 |
| 1 | 3.71E-08 | 0.760576904 | 0.896000147 |
| 2 | 1.27E-07 | 0.999766052 | 0.394111782 |
| 3 | 0.939930797 | 4.15E-07 | 0.720892906 |
| 4 | 0.999999166 | 0.999997139 | 0.504933953 |
| 5 | 0.570978463 | 0.0004694 | 6.06E-08 |
| 6 | 0.241982788 | 0.964732409 | 6.46E-07 |
| 7 | 0.999999404 | 0.073353536 | 0.252263367 |
| 8 | 8.36E-08 | 0.496941149 | 2.35E-08 |
| 9 | 0.121895492 | 0.016978385 | 0.134199679 |
| 10 | 0.999999404 | 0.415482372 | 0.999999881 |
| 11 | 5.05E-08 | 2.28E-07 | 0.597566545 |
| 12 | 0.062696993 | 0.274356782 | 0.999999523 |
| 13 | 0.709320068 | 0.999999762 | 2.20E-05 |
| 14 | 0.454878986 | 1 | 0.999995589 |
| 15 | 0.999997973 | 0.520935893 | 2.51E-08 |

Decoded Data

In the following tables each row represents a number (passed in in position encoding scheme) and each column represents the decoded representation of this data at output node (i) – note this matrix should be the same as our input matrix



3 Layer NN with a hidden layer with 4 perceptron’s

3 Layer NN with a hidden layer with 5 perceptron’s