INF3490 Mandatory Assignment 2

Multi-layer perceptron

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Instructions on how to run my programs:

Python movement.py [number_of_hidden_nodes]

Result with 10 hidden nodes:

Confusion table:

```
[ 7  0  0  0  0  0  0  1]
[ 0 17  0  0  0  0  0  1]
[ 0  0  7  0  0  0  0  0]
[ 1  1  0  8  0  0  1  5]
[ 2  0  0  3 13  0  0  0]
[ 0  1  0  0  0  8  4  0]
[ 0  0  0  0  0  0 14  0]
[ 0  0  0  0  0  0  0 17]]
```

Accuracy: 81.99%

Result with 20 hidden nodes:

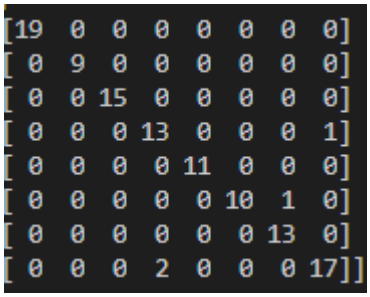
Confusion table:

```
[ 5  0  0  0  0  0  0  1]
[ 0 10  0  0  0  0  0  0]
[ 0  0 13  0  0  0  0  0]
[ 0  1  0 14  0  0  1  0]
[ 0  0  0  2 19  0  0  0]
[ 0  0  0  0  1  9  1  0]
[ 0  0  0  0  0  1 21  0]
[ 0  0  0  1  0  0  0 11]
```

Accuracy: 91.89%

Result with 40 hidden nodes:

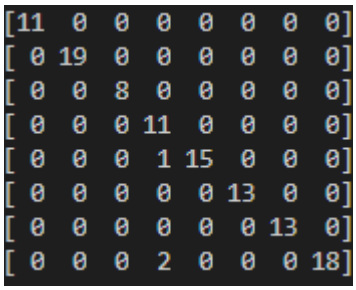
Confusion table:



Accuracy: 96.40%

Result with 40 hidden nodes:

Confusion table:



Accuracy: 97.30%

I found that with numbers higher than 40 the results are usually quite good, normally between 90% and 95%. The cases reported here are some of the best runs.

Looking at these tables, I see that class 8 is often mistakenly categorized as class 4, and sometimes class 1 is mistakenly categorized as class 8.