Neural Science Document Paper

1. A diagram of a company

   Description automatically generated with medium confidenceList of variables which have been taken into account:
2. Dependent, independent and controlled variables listed:

|  |  |
| --- | --- |
| Types of variables | Object |
| Independent | Amount of neurons in the network |
| Dependent | Accuracy of network’s outputs |
| Controlled | Language and libraries |

1. Testable Question:

“How do more neurons in a neural network enhance the accuracy of the outputs generated?”

1. Aim – “Why?”

“To give me a basic understanding of how neural networks work. I want to use them to make cool projects such as a self driving car in any car game, or even making my own algorithm like the ones in YouTube and Spotify.”

1. Hypothesis:

“If the neurons in the neural network is increased, then the accuracy of outputs will increase.”

1. Steps Necessary(Bold is present working step)
   1. 1. Understanding what weights, biases, and neurons are structured into a neural network
   2. 2. Programming the basic neural network with only one neuron and 1 hidden layer
   3. 3. Implementing some maths and adding more neurons to the neural network
   4. 4. Re-coding everything to make it more efficient
   5. 5. Creating a rectified linear class for our first hidden layer
   6. 6. Creating a graph in the python matplotlib library
   7. 7. Creating a softmax activation layer for our second hidden layer
   8. 8. Creating and modelling basic categorical cross entropy with logarithms, target list and one-hot encoding
   9. 9. Implementing everything from step 7 into our main code
   10. 10. Making an accuracy check
   11. **11. Writing everything and designing pre-poster**
   12. 12. Putting everything together
   13. 13. Developing speech
   14. 14. Developing Power-point
   15. 15. Stringing everything together for the science fair
2. Tools / Equipment used:
   1. Lenovo Thinkpad
   2. Dell Mini PC
   3. Python
   4. NumPy – Python Library
   5. MatPlotLib – Python Library
   6. Nnfs(pip only) - <https://github.com/Sentdex/nnfs>
   7. Visual Studio(Main IDE) Microsoft 2022
   8. Visual Studio Code(Secondary IDE) Microsoft 2023
   9. Github – Post code online
3. A diagram of a number of dots

   Description automatically generated with medium confidenceData in graph(matplotlib):
4. Output Results(more neurons):
5. [[0.33333334 0.33333334 0.33333334]
6. [0.33331734 0.3333183  0.33336434]
7. [0.3332888  0.33329153 0.33341965]
8. [0.33325943 0.33326396 0.33347666]
9. [0.33323312 0.33323926 0.33352762]]
10. Loss:  1.098445

p.s need to add accuracy and the less neuron data sample