README

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1 Fully Connected Neural Network

This project is a simple implementation for a fully connected neural network using C++ for Udacity C++ NanoDegree Capstone Project. The chosen problem to apply this neural network was a simple autoencoder. Autoencoders are a specific type of feedforward neural networks where the input is the same as the output.

2 How to Run:

- `cd build && cmake ..`
- `make`
- `./NeuralNetwork`

3 Project Structure:

1. main.cpp
   - Program Main.
2. Neuron.cpp / Neuron.hpp
   - This Class is responsible for the implementation of the neurons of the neural network.
3. Matrix.cpp / Matrix.hpp
   - This class is responsible for the implementation of the matrix data structure and its transpose operation.
4. Math.cpp / Math.hpp
   - This class is responsible for the implementation of the static matrix multiblication operation.
5. Layer.cpp / Layer.hpp
   - This class is responsible for the implementation of the layer and its associated operations.
6. NeuralNetwork.cpp / NeuralNetwork.hpp
   - This class is responsible for the implementation of the Neural Network data structure and basic operations like set input layer, feed forward and back propagation.