This work in an attempt at implementing a fully connected neural network. We have started with implementing a simple Logistic Regression for comparison purposes. The logistic regression has resulted with the following results for loss and accuracy. At the beginning we started with an alpha of 0.1, which was too big for the regression. And thus, provided big loss and not efficient learning curve.

We have noticed and over fitting problem occurring, so we implemented a regularization on the loss function, and we sow improvement.

We later changed the image size to 100X100, to conform the results from this ML to the Neural Network.

Chart, line chart

Description automatically generated

For the Neural Network we used a 2 hidden layer model where the first layer is the size of the number of features, and the second one is the half of it. We have started with the pictures at size 100x100 pixle, the results were inconsistent with the learning curve, so we had to downsize the picture size by half to 50x50 for more efficient learning. From this we assumed that pixels with more importance were kept and given more weight, while pixels with less significance were discarded. In addition, we had problems with big loss values, thus we decreased the size of the learning rate(alpha) and increased the number of iterations to 1600.

We can view the last model we have created; we have implemented regularization on the loss, including learning speed(alpha) of 0.01. We have solved over fitting of the model by decreasing the size of alpha and giving more iterations on the data.

Graphical user interface, application

Description automatically generated