# Neural Network for RGB Value Prediction

## Overview

This project involves implementing a neural network from scratch using Python and NumPy. The network is designed to predict RGB values based on input features, employing a four-layer architecture (two hidden layers).

## Requirements

- Python 3.x
- NumPy
- Pandas
- Matplotlib
- Scikit-learn

## Dataset

The dataset is loaded from yellopaint.binary to output.csv', consisting of feature columns and the last three columns representing RGB values.

## Neural Network Details

- Input Layer: 40 neurons
- Hidden Layer 1: 64 neurons
- Hidden Layer 2: 64 neurons
- Output Layer: 3 neurons (RGB values)
- Activation Function: ReLU
- Loss Function: Mean Squared Error
- Learning Rate: 0.01
- Batch Size: 100
- Epochs: 20

## Training and Evaluation

The dataset is split into training, validation, and test sets. The model is trained using stochastic gradient descent, and its performance is evaluated using mean squared error.

## Usage

The script prints the loss per epoch during training and outputs a plot showing training and validation losses. It also evaluates the model on the test set and prints the test loss.

## Results

After training, the model predicts RGB values on the test set. These predictions are compared with the actual values to assess the model's accuracy.Rendered a plot diagram.