

DOODLE IDENTIFICATION USING NEURAL NETWORK

AUTHOR

Malam Vivek Kanji



AFFILIATIONS

Indus Institute of Information & Communication Technology,
Indus University

Introduction

This text describes a neural network trained to recognize handwritten digits and doodles using datasets like Cifar 10 and Minst. Decision boundaries are used to classify objects based on features, and a hidden layer can be added for more complex boundaries. The cost function and gradient descent algorithm are important for training the network, and it learns slowly but gradually improves until it can perfectly classify training data. The study explores limitations and challenges, providing insights into improving the network's ability to recognize complex patterns and images

Limitations

- Model is limit to only pre-trained doodles & digits.
- Sometimes backpropagation algorithm fails to identify the patterns.
- Few Dark Cifar-10 dataset images are not recognize by model.

Test Results

Mnist Database - Digits

- Sometimes it Identifies 1 as digit 7 because of shape.
- Mirror numbers/rotated numbers are creating complexity.

Doodles

- Few minor changes in drawing results different output.
- Unpredictable drawings has unknown random output.

Cifar-10 Dataset

- Many times it cant predictable because of colour seizure.
- Dark shaded images are not recognized easily.

Technologies

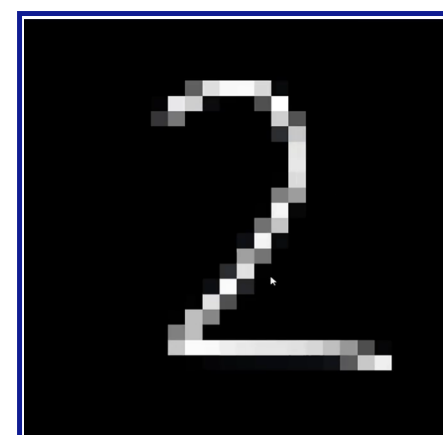
- Game Engine: Unity
- Programming Language: C#
- Others: ShaderLab, HLSL



Modules

- Weight & Biases
- Decision Boundary
- Activation Function (Sigmoid)
- Gradient Decent Algorithm
- Backpropagation
- digit Recognition
- Doodle Identification
- Cifar-10 Predictions

Snapshots

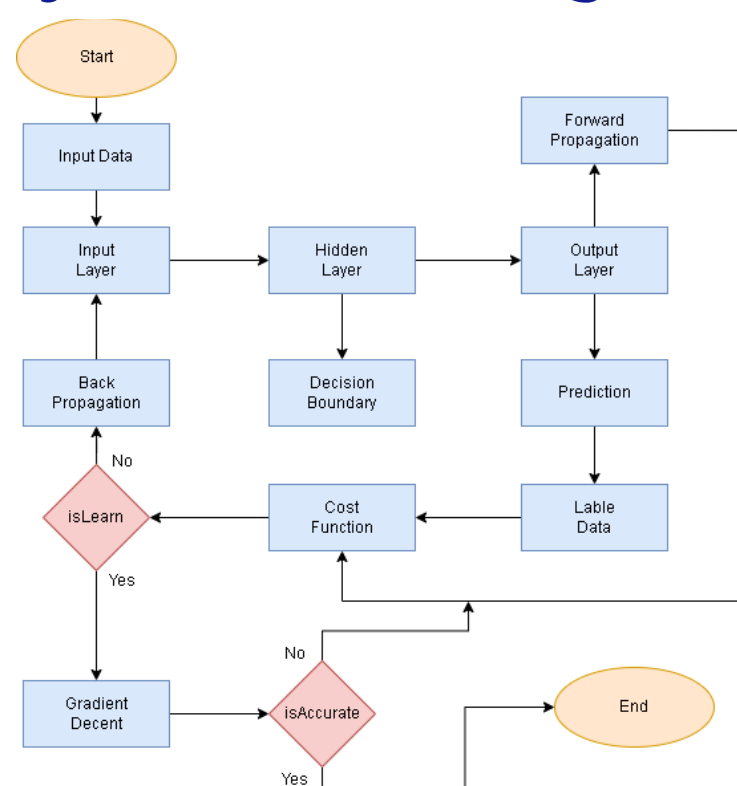


Use graphs to show visualization of your data's analysis.



Write a caption that will clearly explain what this graphic is about and how it relates to the study.

System Flow Diagram



Conclusion

Our model achieved high accuracy and can accurately identify patterns trained with a low learn rate. Increasing the learn rate to 1 results in a significant decline in accuracy due to skipping important grayscale points. Our model uses Activation, Cost, Derivatives, and Backpropagation algorithms to identify complex patterns such as doodles, digits, and images. By using datasets, our model was trained to improve the identification of various recognizable patterns.

