



Artificial Intelligence for digit recognition

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Agenda Overview



Context

This presentation will discuss the potential of CNNs and how they can be effectively utilized to increase accuracy in digit recognition tasks.

Discussion of project choices and explication

CNNs have different layers to help detect and classify patterns seen in digits. Each layer performs a certain task which helps in recognizing various types of information.

The AI Model that was chosen and perspective

We leverage the power of CNN to make our model more efficient for digit recognition both in terms of accuracy as well as time.



Context

- 3 Days of work
- 2 Datasets :
 - train set (42000 examples)
 - test set (28000 examples)
- All the images are 28x28 pixels

Why CNN?

CNN was inspired by the visual cortex.

That is Everytime we see something, a series of neurons gets activated and each layer will detect a set of features such as lines,edges.The high level of layers will detect more complex features in order to recognize what we saw.

In our application for image detection,the need is not only to detect the image but detect it fast.

Introduction to CNNs

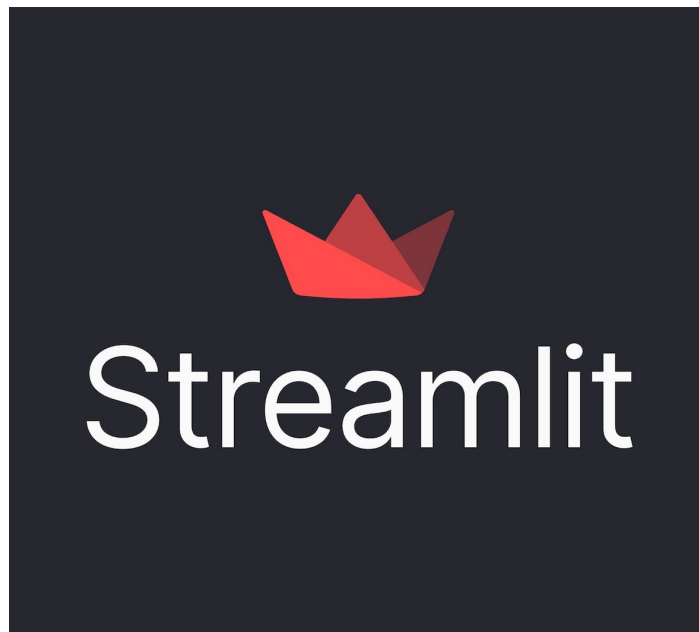
Convolutional Neural Networks (CNNs) are considered the cutting edge for Deep Learning applications. With their ability to recognize complex patterns, they are playing an increasingly important role in the field of Digit Recognition.

CNNs have different layers to help detect and classify patterns seen in digits. Each layer performs a certain task which helps in recognizing various types of information.





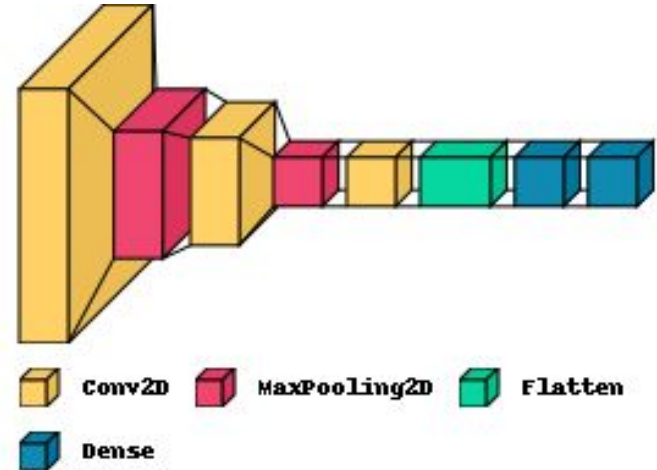
The app



Digit Recognition Overview

Convolutional Neural Networks provide a powerful way to detect and recognize digits in images. With each new layer, the ability of the network to detect more complex features increases.

By combining these layers in a sequential manner, the CNN gradually learns hierarchical representations of the input data. Convolutional layers extract local features, MaxPooling layers downsample and retain important features, Flatten layer prepares the data for fully connected layers, and Dense layers perform classification based on the learned features.

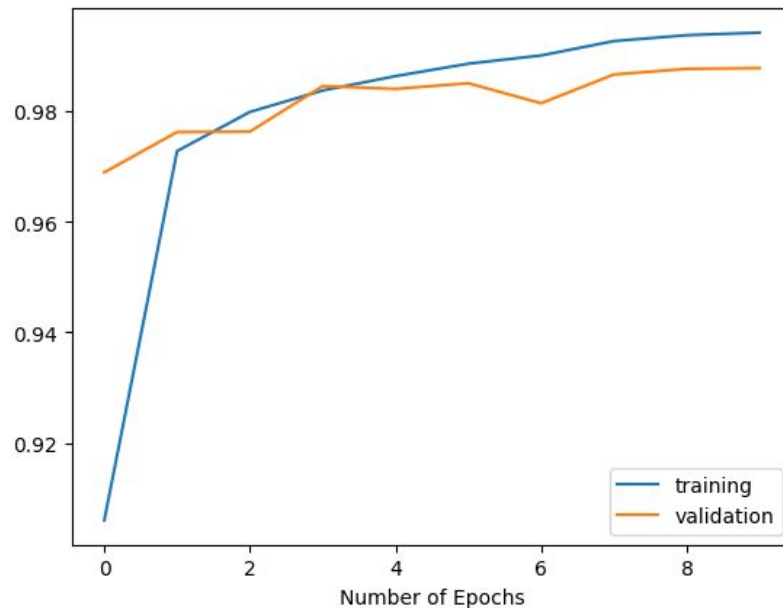


The Model performance

We leverage the power of Training Sets, Neural Networks and different Optimizations techniques to make our model more efficient for digit recognition both in terms of accuracy as well as time.

Accuracy: 0.9061

Validation Accuracy: 0.9689





Perspectives

Challenges

Providing enough data for training, low accuracy due to data noise are some of the key challenges towards development of Deep Learning-enabled Digit Recognition.

Future Works

Exploiting Transfer Learning to improve effectiveness of training sets and overall model performance and Data Augmentation.



Thank you!