# HANDWRITTEN CHARACTER RECOGNITION USING NEURAL NETWORK

# Karthik P S(1NT18CS068)

# Nikhil RajKoti L(1NT18CS107)

# H Puneeth Shetty(1NT18CS049)

**Abstract**

Handwritten character detection is a technique or ability of a computer to receive and interpret intelligible handwritten output. The algorithm used in character recognition is mainly divided into image pre-processing, feature extraction and classification. CNN is found efficient for handwritten character recognition. In this algorithm CNN employs for the classification of individual characters.

**Introduction**

Machine learning (ML) is **a type of artificial intelligence (AI)** that allows software applications to become more accurate at predicting outcomes without being explicitly programmed to do so. Machine learning algorithms use historical data as input to predict new output values. The proposal of our project is to predict the scores of a team batting first based on the previous year observations using various models such as Decision Tree Regression, Linear Regression, Support Vector Regression.

# Data Set

The dataset is chosen from Kaggle website which consisting of set of attributes such as:

The dataset contains 26 folders (A-Z) containing handwritten images in size 28x*28 pixels, each alphabet in the image is centre fitted to 20*20 pixel box.

Each image is stored as Gray-level

The challenge is lot of information is available which may not be necessary to predict our model we need to identify such attributes and trim them and pre-processing of data is required.

# Machine Learning Methods

# 

# CONVOLUTIONAL NEURAL NETWORK:

# Convolutional neural network is a multilayer perceptron and is used to recognize 2D shapes with high degree of invariance.

1. **PADDING**

Padding is a term relevant to convolutional neural networks as it refers to the amount of pixels added to an image when it is being processed by the kernel of a CNN.

1. **SOFTMAX ACTIVATION FUNCTION**

The Softmax activation function calculates the relative probabilities. That means it uses the value of Z21, Z22, Z23 to determine the final probability value.

Finally, we choose a model with less error and more accuracy.

# Assessment: -

Train and test split

k-Fold Cross-Validation

# Presentation and Visualization

We will be showing prediction output.

**Roles**

Each one of us are dividing the work equally.my role to collect the dataset trim the un-required attribute and perform some pre-processing of data, train the decision tree regression model calculate the accuracy and errors in the model. Team-mate role is to train the other two model and calculate the accuracy and error in the model. Finally, we both can come to an conclusion that which model is has better accuracy and less error.

**Schedule:**

**Date Task to be completed**

23/12/2021 Download and observe the dataset.

28/12/2021 Learn about the model.

05/01/2022 Execution of the model and predicting the output.

11/01/2022 Based on the accuracy, choosing the best model for

Prediction.

17/01/2022 Project submission

**Bibliography**

* [**https://data-flair.training/blogs/handwritten-character-recognition-neural-network/**](https://data-flair.training/blogs/handwritten-character-recognition-neural-network/)
* [**https://towardsdatascience.com/an-introduction-to-support-vector-regression-svr-a3ebc1672c2**](https://towardsdatascience.com/an-introduction-to-support-vector-regression-svr-a3ebc1672c2)