A NOVEL METHOD FOR HANDWRITTEN DIGIT RECOGNITION SYSTEM

PRIOR KNOWLEDGE

MACHINE LEARNING:

Machine learning is the science of making computers learn and act like humans by feeding data and information without being explicitly programmed.

SUPERVISED LEARNING:

- It uses known and labeled data as input.
- It has a feedback mechanism.
- Most commonly used supervised learning algorithms are decision tree,logistic regression,support vector machine.

The applications of unsupervised learning are:

- Risk assessment
- Image Classification
- Fraud Detection
- Visual Recognition

UNSUPERVISED LEARNING:

- Uses unlabeled data as input.
- It has no feedback mechanism.
- Most commonly used unsupervised learning algorithms are clustering,hierarchical clustering.

The applications of unsupervised learning are:

- Market Basket Analysis
- Semantic Clustering
- Delivery Store Optimization
- Identifying Accident prone areas.

COMMON ML PROBLEMS:

- Classification
- Regression

- Clustering

CLASSIFICATION:

Classification problems are the problems in which an object is to be classified in one of the n classes based on the similarity index of its features with that of each class.By classes,we mean a collection of similar objects.

REGRESSION:

A regression problem is when the output variable is a real or continuous value ‘salary’ or ‘weight’.Many different models can be used,the simplest is the linear regression.It tries to fit data with the best hyper-plane which goes through the point.

CLUSTERING:

It mainly divides many unstructured data sets into clusters and according to the common attributes present in them,it helps to create more and more clusters.

NEURAL NETWORKS:

A neural network is a method in artificial intelligence that teaches computers to process data in way that is inspired by the human brain.It is a type of machine learning process,called deep learning,that uses interconnected nodes or neurons in a layered structure that resembles the human brain.

CNN:

A convolutional neural network is a network architecture for deep learning which learns directly from data,eliminating the need for manual feature extraction.CNNs are particularly useful for finding patterns in images to recognize objects,faces and scenes.

ANN:

A single perceptron (or neuron) can be imagined as a Logistic Regression.Artificial Neural Network, or ANN, is a group of multiple neurons at each layer. ANN is also known as a Feed-Forward Neural network because inputs are processed only in the

forward direction.

RNN:

It uses the same parameters for each input as it performs the same task on all the inputs or hidden layers to produce the output.This looping constraint ensures that sequential information is captured in the input data.It contains memory which remembers all information about what has been calculated.