ARECANUT PRICE PREDICTOR

A PROJECT REPORT-PHASE 1

Submitted to

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by

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Chapter 1

Introduction

1.1 Project Introduction

Machine Learning and Data science have a broad application in forecasting mechanism. Predicting the arecanut price may help growers to get better value for their crop. Using Machine Learning techniques, can bring changes in agriculture development. The volume of data that has been found under Indian Agriculture is vast enough. Once if these data becomes information, it would be highly useful for many purposes. Training data is obtained from previous market price, and the collected data is used from a training perspective that has been leveraged.

1.2 Problem Description

Prices of agricultural commodities such as crops, livestock, and dairy are affected by numerous factors such as climate, government policies, crop diseases, availability ect. The prices of these type of commodities are volatile and and can either turn for the good or bad. Arecanut is the valuable tropical cash crop cultivated in India. Over the past few years, the prices of arecanuts had its peaks and valleys affecting the farmers and suppliers as a whole. India has the largest production of arecanuts based on FAO statistics 2013. So the prediction of the upcoming price raise or drop will be a tough call to farmers and suppliers. To overcome this problem, system is developed to help in predicting the future price of arecanut based on historical price.

Chapter 2

Literature Review

2.1 General Introduction

Literature Survey is an important activity, which is done while gathering information about a particular topic. It will help us to get required information or ideas to do work.The following paragraphs discuss the related work and issues in the area Prediction and Analysis of Energy Consumption in a Computer Laboratory using machine learning algorithm.

2.2 Literature Survey

Gan-qiong Li a, b*, Shi-wei Xu a, b, Zhe-min Li a, b [1]. ANN is in a sense the ultimate 'black boxes'. Apart from defining the general architecture of a network and perhaps initially seeding it with a random numbers, the user has no other role than to feed it input and watch it train and await the output. The final product of this activity is a trained network that provides no equations or coefficients defining a relationship beyond it's own internal mathematics.

Yagyanath Rimal [2]. A neural network is a powerful computational data model capable of capturing and representing complex input / output relationships. Neural networks are the most successful methods for analyzing large amounts of data.

K. Hiba Sadia, Aditya Sharma, Adarsh Paul, Sarmistha Padhi, Saurav Sanyal [3]. By measuring the accuracy of the different algorithms, we found that the most suitable algorithm for predicting the market price of a stock based on various data points from the historical data is the random forest algorithm.

Sidra Mehtab, Jaydip Sen and Abhishek Dutta [4]. The study has conclusively proved our conjecture that deep learning-based models have much higher capability in extracting and learning the features of a time series data than their corresponding machine learning counterparts.

T. Chai and R. R. Draxler [5].The sensitivity of the RMSE to outliers is the most common concern with the use of this metric. In fact, the existence of outliers and their probability of occurrence is well described by the normal distribution underlying the use of the RMSE.

2.3 Comparative analysis of the related work

The comparative study of the existing systems with respect to the proposed project is discussed in the table below.

Table 1. Comparative Analysis

Sl.No	Author(s)	Algorithms/Techniques	Performance Measures
1.	Yagyanath Rimal	Neural network Machine learning Technique for large noisy data prediction.	Accuracy
2.	Sidra Mehtab, Jaydip sen and Abhishek Dutta	LSTM based deep learning regression models	Accuracy
3.	T.Chai and R. Draxler	Probability of occurrence is well described by the normal distribution underlying the use of the RMSE.	Accuracy

2.4 Summary

The proposed project train the Neural Network algorithm to attain the best accuracy in getting the future price of arecanut. It will be trained with historical prices of Areca nut dataset with different APMC's and then tested with the real time test cases to find the accuracy of the algorithm. Proposed system aim to get maximum accuracy by calculating RMSE (Root Mean Square Error) and take that as an output. Hereby decided to develop average monthly price forecasting models for the major markets. This type of market price forecasting may be important to both government and industrial sector to predict future policy marketing decisions. Since uncertainty increases as prediction is made further from data we have, the standard errors associated with predictions increases.

Chapter 3

Problem Formulation

3.1 General

Before attempting to solve a problem, we need to first formulate or define the problem. It is important to precisely define the problem you intend to solve. Problem formulation is the act of a problem, determining the cause of the problem and, identifying the solution.

3.2 Problem Statement

As it is observed that arecanut prices are not constant always, it sometimes goes up and sometimes down. The ups and down are due to many constraints like over rain and over heat. And due to market ups and downs farmers may face losses. By predicting the price using machine learning the margin of the loss can be reduced. The previous rate of areca nut is the constraint to predict the new price.

3.3 Objectives of the Present Study

The objectives of the proposed project are as follows:

1. To develop a prediction based Arecanut price predictor system.
2. To design and implement neural network that takes out the best possible output and calculating RMSE (Root Mean Square Error) and taken as output which is more accurate arecanut price.

3.4 Summary

Neural network is a series of algorithm that endeavors to recognize underlying relationships in the set of data through a process that mimics the way human brain operates. This neural network can adapt to changing output. So thenetwork generates the best possible result without needing to redesign the whole output criteria.The RMSE (Root Mean Square Error) is the good measure of accuracy in prediction problems.

Chapter 4

Requirements and Methodology

4.1 Requirements

The proposed project consists of following modules:

4.1.1 Hardware requirements

4.1.2 Software requirements

4.1.1 Hardware Requirements

The hardware requirements for the proposed project are depicted in the table below:

Table 4.1: Hardware requirements

Sl.No	Hardware/Equipment	Specification
1.	Graphic Card	Intel 621 graphic card or 2 GB
2.	RAM	4GB and above

4.1.2 Software Requirements

The software requirements for the proposed project are depicted in the table below:

Table 4.2:Software Requirements

SL.NO	Software	Specification
1	Anaconda	Anaconda 64 bit
2	R	RStudio

4.2 Methodology Used

The Arecanut price prediction task consists of following steps:Read data from csv file which consists of historic data of arecanut price, Sampling without Replacement, Model Train and Verification, Normalization of data, Build neural network, Calculate Root Mean Square Error (RMSE)and take the output as predicted price.

Chapter 5

System Design

5.1 System Design

System design is a one important phase in software or system development. System design can be defined as method of defining different modules required for software or system to fulfill all requirements.

5.1.1 Architecture of proposed system

System design shows the overall design of the proposed Arecanut price predictor system, which is depicted in figure 5.1 shown

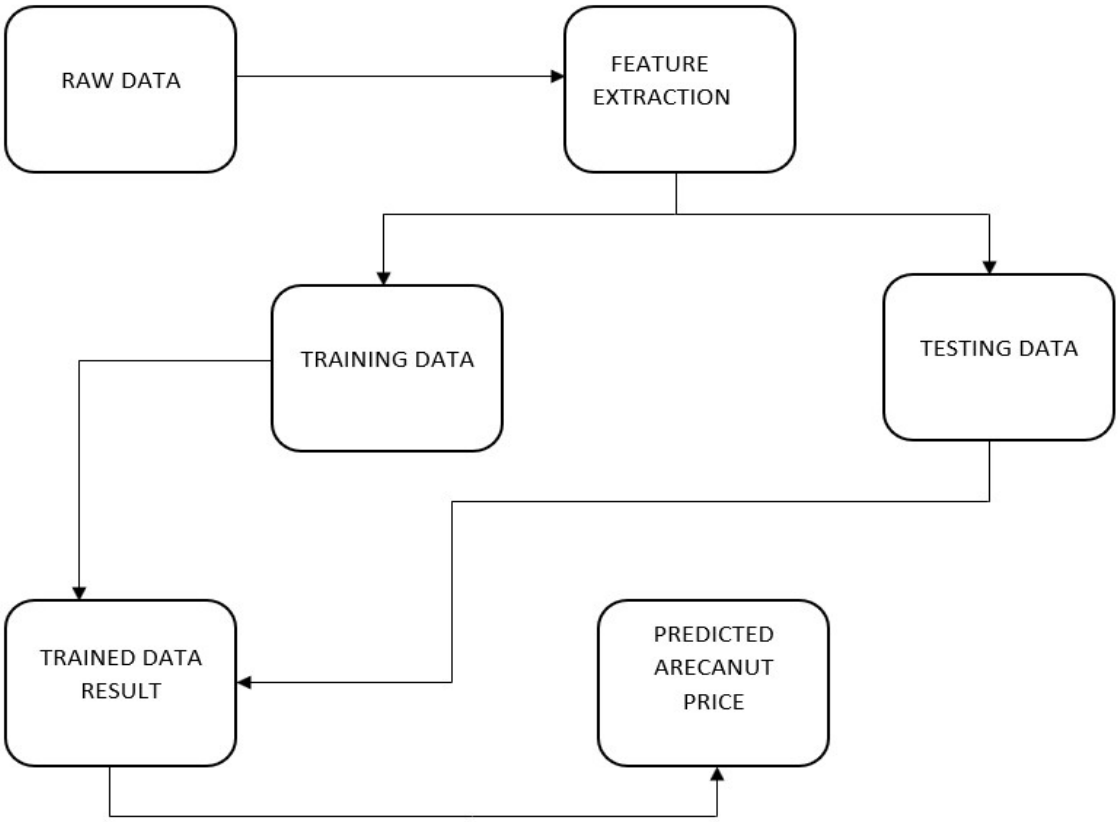

Figure 5.1: Design of the proposed system

5.1.2 System flowchart

The flowchart of the proposed system is depicted in figure 5.2 shown below:

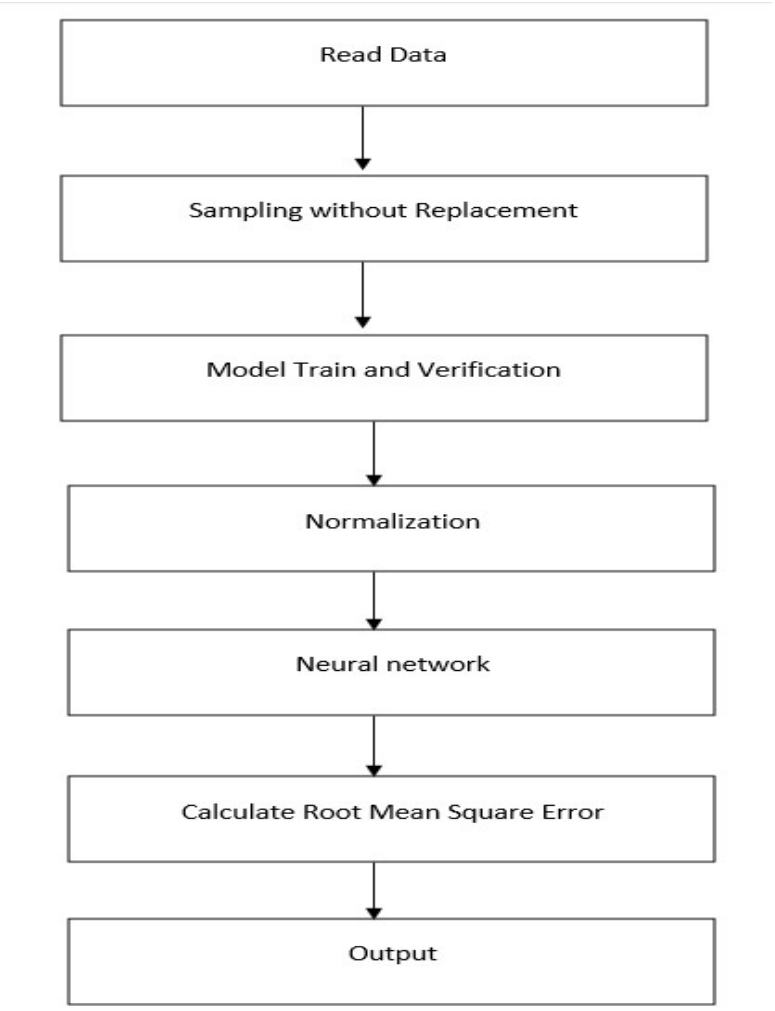

Figure 5.2: Flowchart of the proposed system

Chapter 6

Conclusion

The proposed system works in the following format that, the neural network is built after the sampling and normalization of data and then root mean square error (RMSE) is calculated and then the desired output is taken. It was able to closely forecast predictable outcomes. To make prediction related expectations more efficient, it can be done by including bulky data sets that have millions of entries and could train the machine more powerfully. No training data can ever be stable, hence there are always some unevenness.

Chapter 7

Plan for completion of pending work

Sl.No	Month	Task to be completed
1.	February	Pseudo code development
2.	March	Implementation using suitable Programming Language
3.	April	System Testing, Feedback
4.	May	Report Submission

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