**Predictive Analysis to Improve Crop Yield using a Neural Network Model**

**Abstract**

Agriculture has been the sector of paramount importance as it feeds the country population along with contributing to the GDP. Crop yield varies with a combination of factors including soil properties, climate, elevation and irrigation technique. Technological developments have fallen short in estimating the yield based on this joint dependence of the said factors. Hence, in this project a data-driven model that learns by historic soil as well as rainfall data to analyse and predict crop yield over seasons in several districts, has been developed. For this study, a particular crop, Rice is considered. The designed hybrid neural network model identifies optimal combinations of soil parameters and blends it with the rainfall pattern in a selected region to evolve the expectable crop yield. The backbone for the predictive analysis model with respect to the rainfall is based on the Time-Series approach in Supervised Learning. The technology used for the final prediction of the crop yield is again a branch of Machine Learning, known as Recurrent Neural Networks. With two inter-communicating data-driven models working at the backend, the final predictions obtained were successful in depicting the interdependence between soil parameters for yield and weather attributes.

**Existing system**

* The yield obtained primarily depends on weather conditions as rainfall patterns largely influence cultivation methodologies. With this context, farmers and agriculturalists require spontaneous advice proposition in predicting future reaping instances to maximize crop yield.
* Due to insufficient involvement of technology, the throughput of agriculture is yet to reach its full glory. Every farmer is interested in knowing the yield he/she could expect at the harvest period and hence, yield prediction is an important aspect for them. Over the years, farmers have an idea about the pattern in yield as per innate human intuition.

**Disadvantages**

* There is no proper site to get the analysis of price per crop.

**Proposed system**

* The proposed architecture provides a computational dimension to enhance knowledge about the yield before the crop sowing period. It is made possible through a data driven hybrid model. Since the model performs a joint prediction of both rainfall and soil features on the yield, it is termed as a hybrid model.
* Around 23 commodities(including all kind of crops) crop value forecasting Crop detailed forecast upto next 12 months Top Gainers and Losers of current time Crop price prediction with 93-95% accuracy Model trained on authenticated datasets provided by [data.gov.in](https://data.gov.in/)

**Advantages**

* Detailed analysis of crop prices using tables and charts
* Prediction done by using Polynomial Multivariable Regression techniques.
* Annual Rainfall, WPI(Wholesale Price Index) datasets are used for training the model
* User friendly UI made by using materialize css

**Software requirements**

**H/W System Configuration:-**

➢ Processor - Pentium –IV

➢ RAM - 4 GB (min)

➢ Hard Disk - 20 GB

➢ Key Board - Standard Windows Keyboard

➢ Mouse - Two or Three Button Mouse

➢ Monitor - SVGA

**Software Requirements:**

* Operating System - Windows
* Packages - [Flask](http://flask.pocoo.org/),[Scikit-Learn](https://scikit-learn.org/),[MaterializeCSS](https://materializecss.com/),[Chart.js](https://www.chartjs.org/)
* Programming language - [Python(3.0 or above)](https://www.python.org/)

**References**

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