



Deep Learning Based Short-Term Forecasting Of Orange and Cotton Crop In Context Of Indian Market

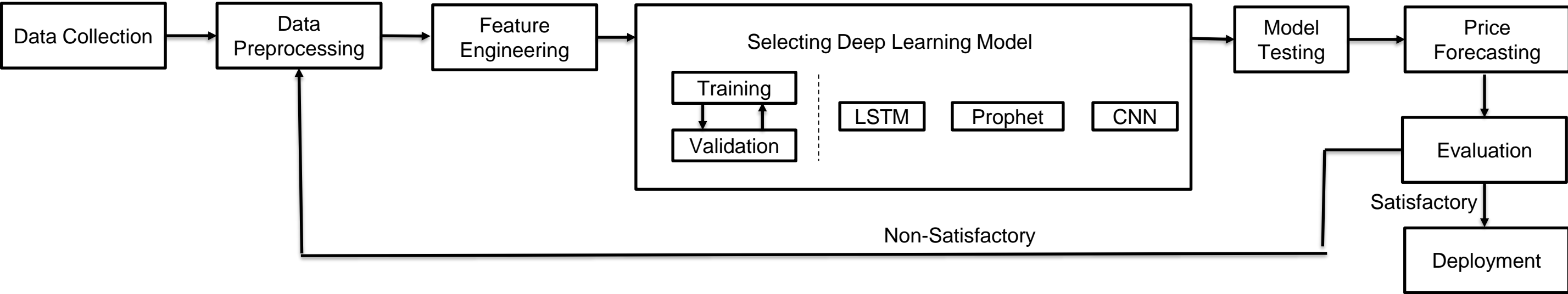
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Abstract: The project tackles the challenge of accurately forecasting orange and cotton crop prices in India's volatile agricultural market. Key issues include handling complex and incomplete datasets from the Indian Government, selecting appropriate Deep Learning algorithms like LSTM, Prophet and CNN to model nonlinear price dynamics, addressing regional and seasonal variations, and comparing Deep Learning's effectiveness against traditional methods. By overcoming these challenges, the project aims to deliver precise short-term forecasts, aiding stakeholders in making informed decisions amidst market uncertainties.

Introduction: The pricing of crops like cotton and oranges in India significantly impacts farmers' livelihoods. Deep learning algorithms can address the lack of accurate forecasting models by analyzing past price trends and relevant data, aiding farmers, traders, and policymakers in making informed decisions amidst price fluctuations .The project aims to forecast orange and cotton crop prices in the Indian market using Deep Learning. Starting with exploratory data analysis (EDA) to handle missing data and identify patterns, the dataset will be split into training, testing, and validation sets. Deep Learning algorithms like LSTM, Prophet and CNN will be used for forecasting, considering regional and seasonal aspects. Accuracy will be compared across different geographic levels.

Block Diagram:



Experimental Results(in price):

Algorithms	ARIMA(Autoregressive Moving Average)	Linear Regression	SVR(Support Vector Regression)	FB - Prophet	LSTM (Long Short-Term Memory)
MAE (Mean Absolute Error)	1492.94	189.33	398.65	2204.7950	4601.6069
MSE (Mean Squared Error)	3223544.63	108074.73	565297.84	6012436.5967	23179133.2709
RMSE (Root Mean Square Error)	1795.42	328.74	751.86	2452.0270	4814.47123

- Results:** In the context of forecasting, ARIMA serves as a benchmark model. Among the machine learning algorithms, Linear Regression (LR) demonstrates superior performance. Meanwhile, FB-Prophet outperforms other deep learning algorithms in forecasting accuracy.

Conclusion and Future scope:

- Conclusion:**
- Implementing Deep Learning models for short-term forecasting of cotton and orange crop prices in India can significantly benefit farmers, traders and policymakers.
 - These models provide accurate price predictions based on historical data and relevant factors.
- Future scope:**
- Incorporating Additional Data Sources:** Integrate real-time weather and satellite imagery data to enhance prediction accuracy by capturing the impact of environmental conditions on crop prices.
 - Advanced Model Enhancements:** Develop hybrid models combining strengths of different algorithms and include socio-economic factors to improve the robustness and accuracy of the forecasting system.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3										3		2
CO2	3		3	3	3	3	3	2					3	2
CO3						2			3	3	3	3		

Signature of Guide