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DEPARTMENT OF INSTRUMENTATION ENGINEERING

PROJECT TOPIC : Crop Recommendation using Machine Learning

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GUIDE NAME
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CONTENT

AIM/OBJECTIVE

“Predict crop sustainability to assist farmers in growing a good crop based on soil conditions.”

PROBLEM STATMENT

To develop a recommendation system using machine learning for crop growth by taking all the factors like rainfall and soil type to build a simpler mechanism to predict the crops that are suitable to be grown in that soil.

Literature survey

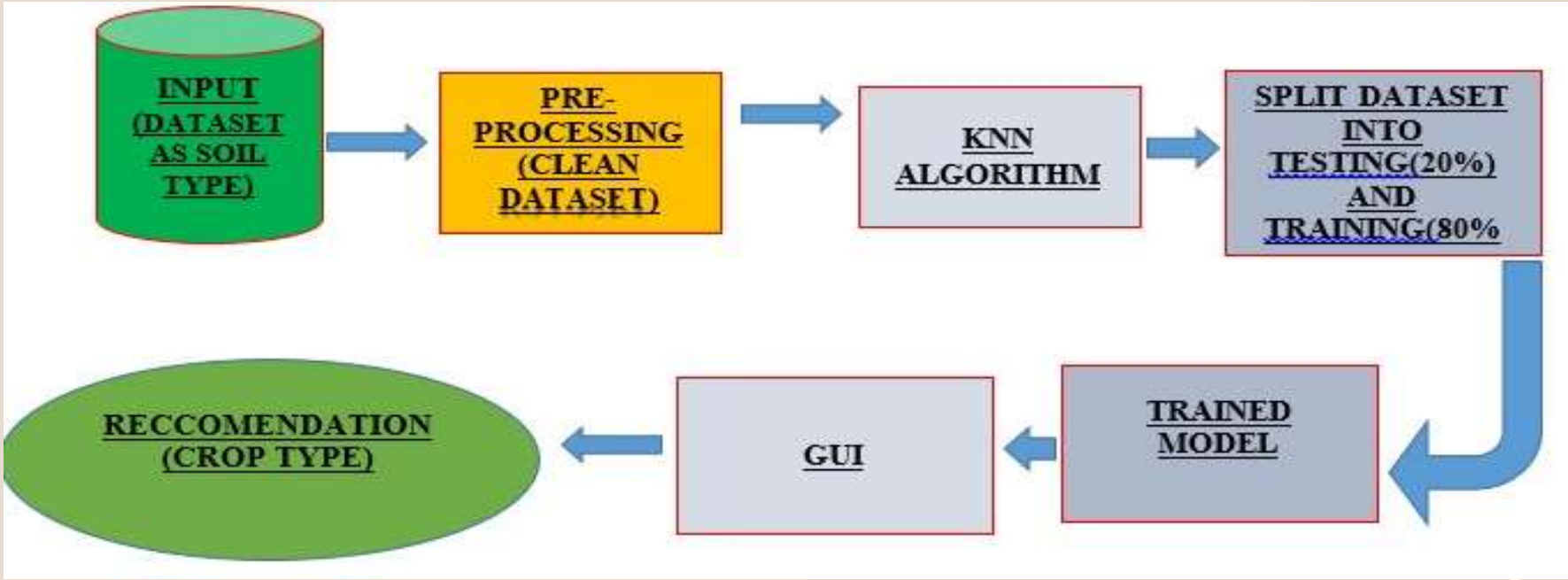
Paper	Datasets	Methodology	Accuracy	References
IEEE (June 2021)	Online source	Random forest(RF)	75%	[1]
IEEE(May 2021)	Github	Random forest(RF), and Artificial Neural Network(ANN)	RF works much better than ANN	[2]
IEEE(May 2021)	Online source	Random forest(RF)	95%	[3]
IEEE(2020)	Kaggle website	Decision Trees(DT), Random forest(RF)	RF is more accurate than DT	[4]
IEEE (2018)	various government departments of Tamilnadu	K Nearest Neighbour (KNN)	96%	[5]
IEEE(2020)	agriculture field	Neuro-Fuzzy	80%	[6]
IRJET (2022)	Kaggle website	Random forest(RF), Decision Trees(DT), Support Vector Machine (SVM)	RF = 96% RF is more accurate than DT and DT much batter than SVM	[7]
IEEE(2018)	India Agriculture and Climate Data Set	Random forest(RF), Decision Trees(DT), K Nearest Neighbour (KNN)	DT = 90.20% K-NN = 89.78 RF = 90.43	[8]

INTRODUCTION

- **crops suggestion.**
- **Series are recognized by machine learning**
- **KNN**
- **GUI**

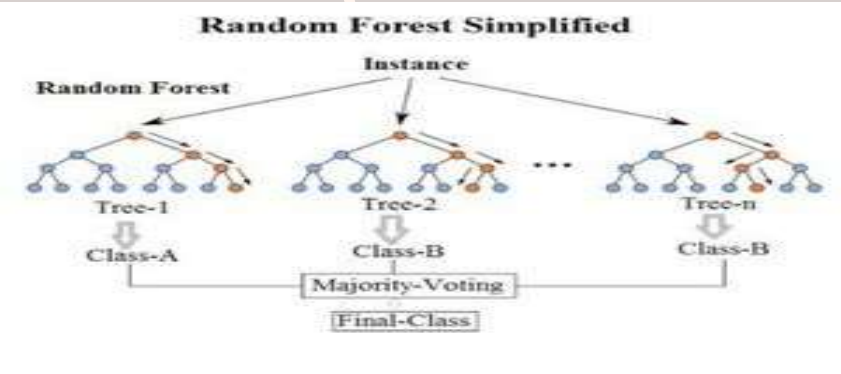
METHODOLGY

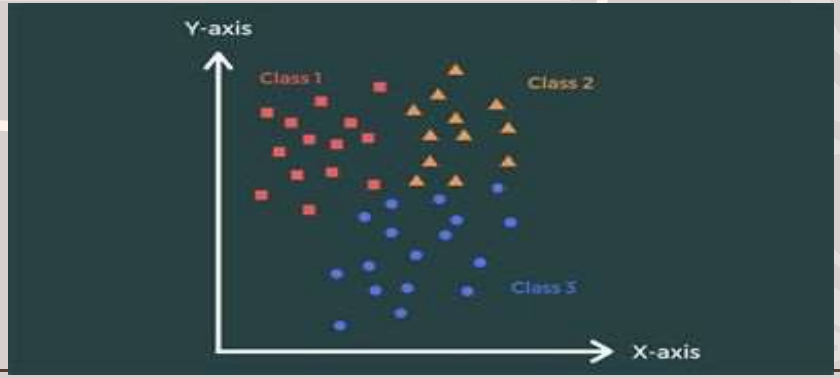
- Dataset- Kaggle Website
- Data Pre-processing
- Predictive Model
- Crop Recommendation System



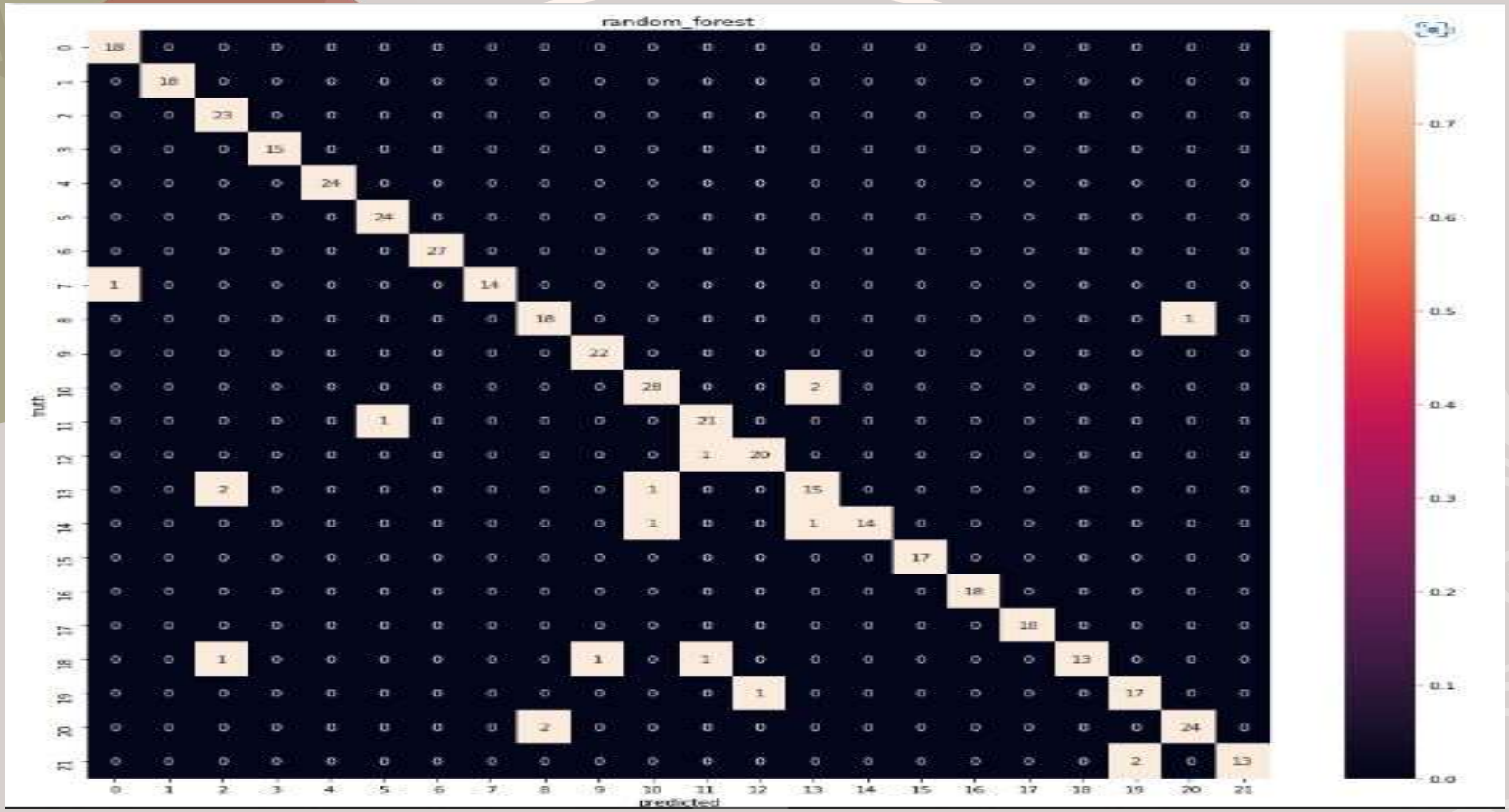
ALGORITHM USED

NAME OF ALGORITHM	ACCURACY
RANDOM FOREST	96%
KNN	99%

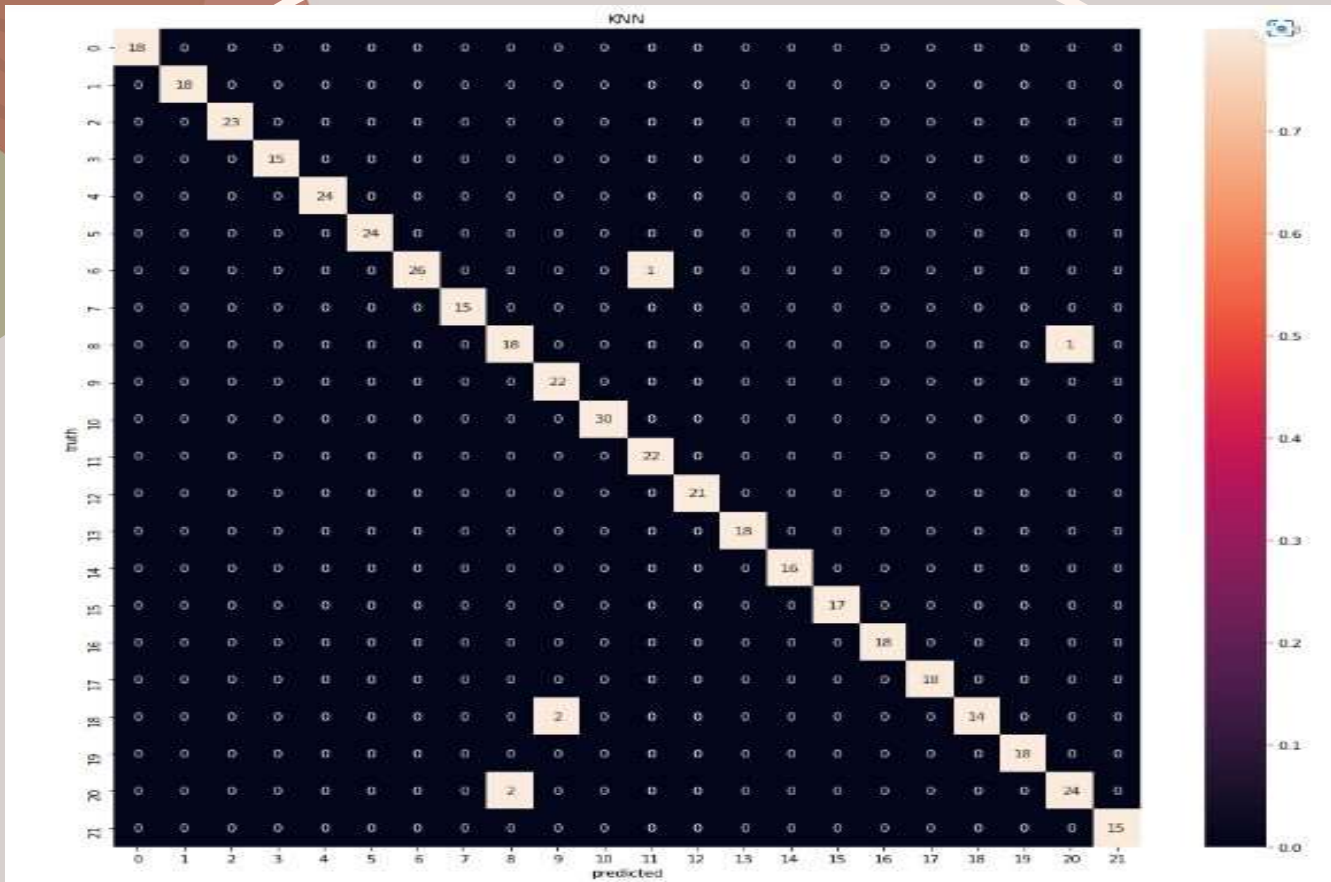




RANDOM FOREST



K- NEAREST NEIGHBORS



SOFTWARE REQUIREMENT

- Operating system : 64 bit Windows 10.
- Coding Language : Python(TKinter)
- IDE : Spyder.
- Python Library : Tensorflow, Keras, Opencv, Matplotlib
- Database : DBSqlite3

Conclusion

- A model is proposed for predicting soil series and providing suitable crop yield suggestion for that specific soil and weather.
- The model has been tested by applying different kinds of MACHINE algorithm.
- KNN shows highest accuracy in soil classification and suggests crops with less time. It gives us more accuracy as compared to existing system and gives more benefit to farmers.

Future Work

- In reference to rainfall can depict whether extra water availability is needed or not. This research work can be enhanced to higher level by availing it to whole India.
- Crop diseases detection using Image Processing where users can upload picture of diseased crop and get pesticides recommendations.
- Implementation of Smart Irrigation System to monitor weather and soil conditions, plant water usage etc. to automatically alter watering schedule.

References

- [1] N. S. I. P. P. P. K. N. Namgiri Suresh, "Crop Yield Prediction Using Random Forest," in *7th International Conference on Advanced Computing & Communication Systems (ICACCS)*, IEEE 2021.
- [2] T. S. Mullangi Ramu, "Wheat yield prediction using AI model," in *International Conference on Advanced Computing & Inovative Technologices in Enginnering (ICACITE)*, IEEE May 2021.
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- [4] V. S. Dr. Y. Jeevan Nagendra Kumar, "Supervised Machine learning Approach for," in *Proceedings of the Fifth International Conference on Communication and Electronics Systems (ICCES 2020)*, IEEE 2020.

- [5] D. P. G. K. D. Mr A Suresh, "Prediction of major crop yields of Tamilnadu," in *Proceedings of the International Conference on Communication and Electronics Systems (ICCES 2018)*, IEEE 2018
- [6] E. E. Vigneswaran1, "Decision Support System for Crop Rotation Using," in *Fourth International Conference on Inventive Systems and Control (ICISC 2020)*, IEEE2020.
- [7]P. M. D. Ajay Lokhande, "Crop Recommendation System Using Machine Learning," in *International Research Journal of Engineering and Technology (IRJET)* , 2022

thank you