

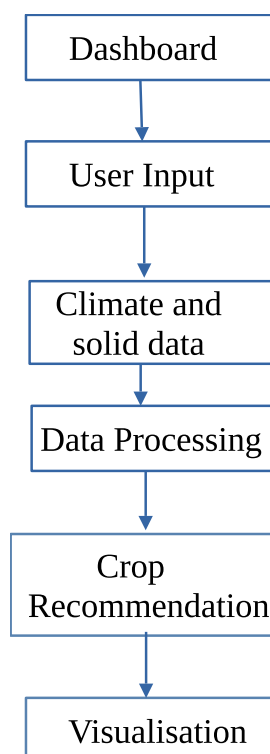


**Veer Bahadur Singh Purvanchal University, Jaunpur (U.P.)**  
**Faculty of Engineering and Technology (UNSIET)**  
**Department of Computer Science & Engineering and Information Technology**

**PROJECT PROPOSAL**

<b>PROPOSED PROJECT TITLE</b>	:	ML-Based Climate-Aware Crop Recommendation System
<b>AREA OF PROJECT WORK &amp; THEME</b>	:	<b>Area:</b> Artificial Intelligence (AI), Machine Learning (ML), Agriculture Technology <b>Theme:</b> An ML-powered decision support system that recommends the most suitable crops for the land by analyzing climate conditions, soil properties, and historical crop data. The system provides insights for farmers, agronomists, and policymakers with an interactive dashboard.
<b>TYPE OF MODEL</b>	:	Software
<b>AIM OF THE PROJECT</b>	:	To develop an intelligent platform that recommends optimal crops based on real-time and historical climate data, soil parameters, and crop performance trends. The system aims to help farmers maximize yield, reduce crop failure risks.
<b>PROJECT CONCEPT/IDEA</b>	:	Climate change and unpredictable weather patterns make crop selection challenging for farmers. It is an ML-powered solution that leverages climate datasets, soil test data, and crop yield history to suggest the best crops for a given region and season. Provided features: <ul style="list-style-type: none"><li>• Climate-aware crop recommendation</li><li>• Visualization of historical crop yield and weather patterns</li><li>• Seasonal and location-specific crop suitability analysis</li><li>• Soil fertility and nutrient-based prediction</li></ul>

**PROPOSED BLOCK DIAGRAM OF THE PROJECT:**



The diagram represents the **ML-Based Climate-Aware Crop Recommendation System**, where the user inputs farm location, soil data and season/forecast duration through the web dashboard. The system retrieves real-time climate data from APIs and historical crop yield datasets. Preprocessing ensures data cleaning, normalization, and feature extraction, including climate indicators and soil fertility indices. Machine learning models such as **Random Forest, Gradient Boosting, or Neural Networks** are trained to predict crop suitability scores. Finally, the dashboard displays ranked crop recommendations with expected yield and farming guidelines.

<b>SPECIFIC REQUIREMENTS FOR IMPLEMENTATION</b>	:	<ul style="list-style-type: none"> <li>• <b>Programming Language</b> - Python</li> <li>• <b>Libraries</b> – NumPy, Pandas, Scikit-learn, TensorFlow</li> <li>• <b>ML Model</b> – ML algorithms</li> <li>• <b>Visualization</b> – Matplotlib, Seaborn, Streamlit</li> </ul>
<b>APPLICATION(S)</b>	:	<ul style="list-style-type: none"> <li>• Yield optimization through scientific crop selection</li> <li>• Risk mitigation for climate-sensitive crops</li> <li>• Decision support for farmers and agricultural officers</li> <li>• Crop recommendation based on climate and soil conditions</li> </ul>
<b>SOURCE REFERENCE(S)</b>	:	<ul style="list-style-type: none"> <li>• Historical Dataset - Government Agriculture Departments</li> <li>• Streamlit Documentation</li> <li>• Research Papers on Crop Modeling and Climate Impact</li> <li>• India Meteorological Department (IMD) Weather Data</li> </ul>
<b>NAME OF PROJECT TEAM MEMBERS</b>	:	Aniruddha Singh (22001304013) Vaibhav Rai (22001304056)

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**RECOMMENDED/ NOT-RECOMMENDED**

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**NAME & SIGNATURE OF PROJECT GUIDE (With Date)**

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**EVALUATION REMARKS BY PROJECT COORDINATOR(S):**

**(APPROVED/NOT-APPROVED)**

**B.TECH. PROJECT GROUP No.:#:**

**APPROVED/ NOT-APPROVED**

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**SIGNATURE OF PROJECT COORDINATOR(S)**

