

## ABSTRACT

Agriculture is the backbone for human sustainability and development, to make sure that humanity thrives, various approaches are equipped. Enhanced farming is an approach that uses technology to make farming more efficient and sustainable for better yield. However climate had played a vital role in the agricultural industry, Existing system fails to include climate parameters and those that include climate parameters fail to use advanced technologies like Machine learning and Artificial Intelligence. The proposed agricultural decision support system integrates a user-friendly web application with a robust backend, utilizing HTML, CSS, and JavaScript for the frontend and Python with Flask for the backend. The system incorporates a machine learning model to analyze historical agricultural data, continuously learning and adapting to provide personalized farming suggestions. Data from various sources, including weather, soil quality, is integrated into a unified database through custom APIs. The methodology involves thorough requirement analysis, technology stack selection, API identification, ML model development, user interface design, backend development, testing, deployment to a secure server, and establishing a maintenance plan for regular updates and issue resolution. This comprehensive approach ensures a scalable, efficient, and user-friendly solution for farmers, enhancing their decision-making processes in agriculture.