

AI-Enabled Agricultural Decision Support System for Sustainable and Cost-Effective Farming in Maharashtra

Introduction

Indian agriculture faces challenges such as unpredictable weather, water scarcity, and low productivity. This project integrates AI models, data analytics, and farmer-owned digital tools to provide scientific decision support.

Aim

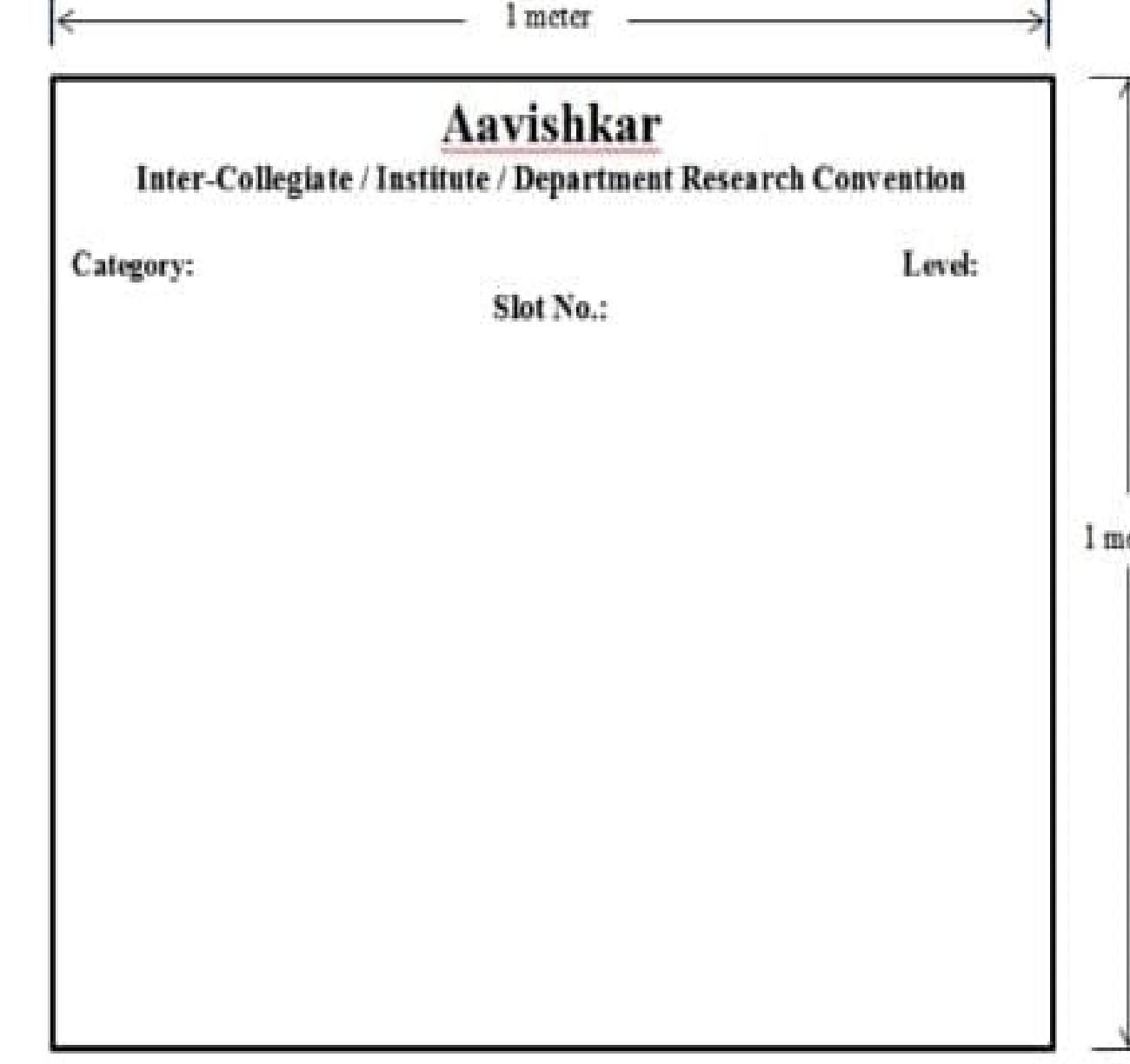
To develop a low-cost, AI-driven system offering personalized agricultural recommendations for improved productivity and sustainability.

Objectives

- Analyze weather, soil, and crop data using AquaCrop and LLM models.
- Recommend crop selection, irrigation schedules, fertilizer usage, and water planning.
- Provide real-time weather alerts.
- Maintain a digital farming diary.
- Suggest government schemes and financial assistance.

Research Methodology

The following diagram represents the workflow of the system:



Results and Visuals

Sample outputs include crop recommendations, irrigation schedules, yield estimation reports, fertilizer suggestions, and weather alert formats, demonstrating reduced water usage & operational cost.

Literature Cites / Resources

- FAO AquaCrop Model Documentation
- Remote sensing AI-based crop prediction
- Government agriculture portals
- Studies on transformer models in agriculture

Acknowledgments

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