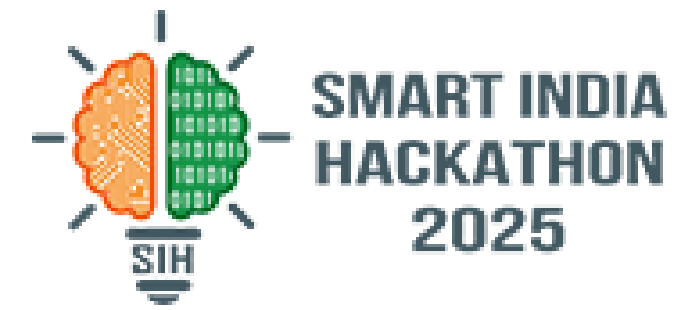


SMART INDIA HACKATHON 2025



- **Problem Statement ID** - 25044
- **Problem Statement Title** - AI-Powered Crop Yield Prediction and Optimization
- **Theme** - Agriculture, FoodTech & Rural Development
- **PS Category** - Software
- **Team ID** -
- **Team Name** - SemiColon



AI-Powered Crop Yield Prediction & Smart Recommendations

Proposed Solution:

- **Detailed Farmer Input:**

Farmers provide essential data like crop type, field size, location, crop variety, sowing month, and soil type to tailor predictions.

- **Accurate Yield Forecast:**

AI uses this data along with environmental factors to predict the expected crop yield, helping farmers plan more effectively.

- **Comprehensive Risk Analysis:**

Visual pie charts highlight key risks including disease, soil conditions, moisture level, and weather to help farmers assess threats.

- **Guaranteed Yield Increase & Savings:**

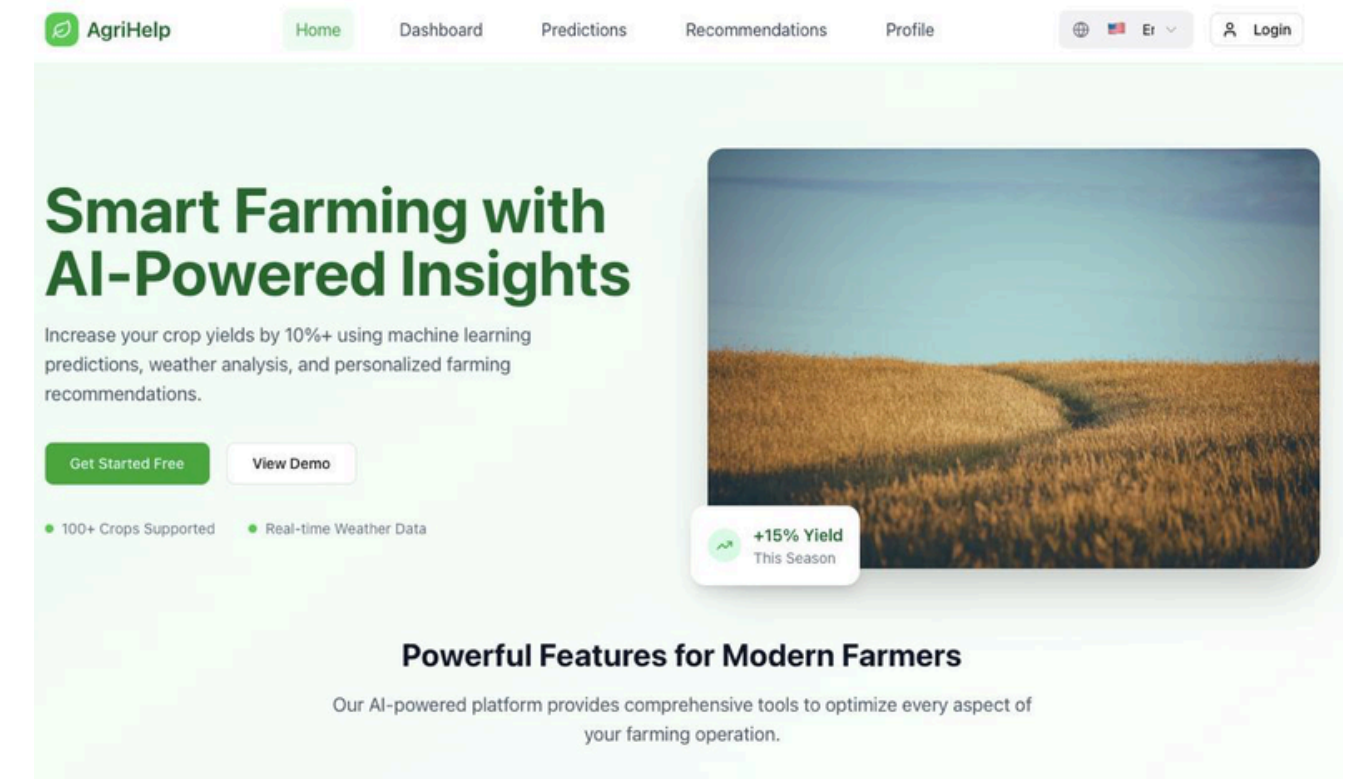
Recommendations ensure at least a 10% increase in potential yield alongside measurable cost savings.

- **Smart Farming Recommendations:**

Tailored advice on irrigation, fertilization, and pest control drives improved crop health and output.

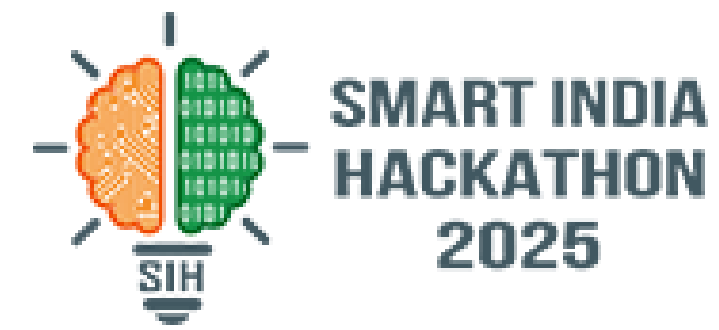
- **Accessible & Personalized Platform:**

Multilingual interfaces with voice support and a personalized farmer dashboard enable easy monitoring and control.



Homepage of AgriHelp

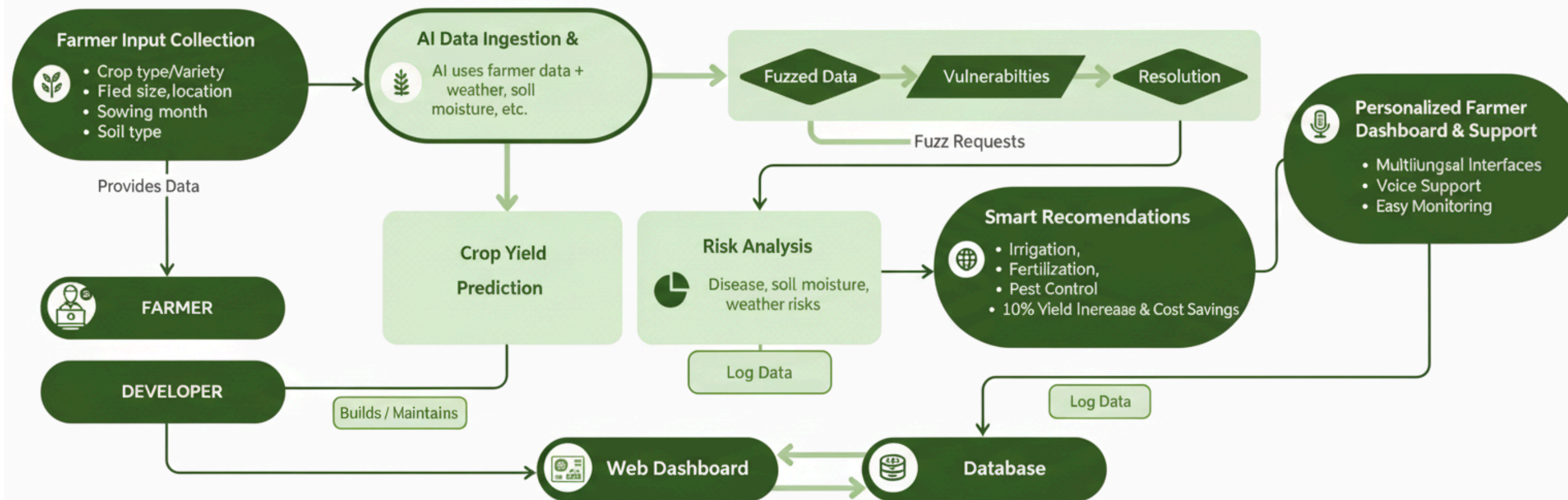
TECHNICAL APPROACH



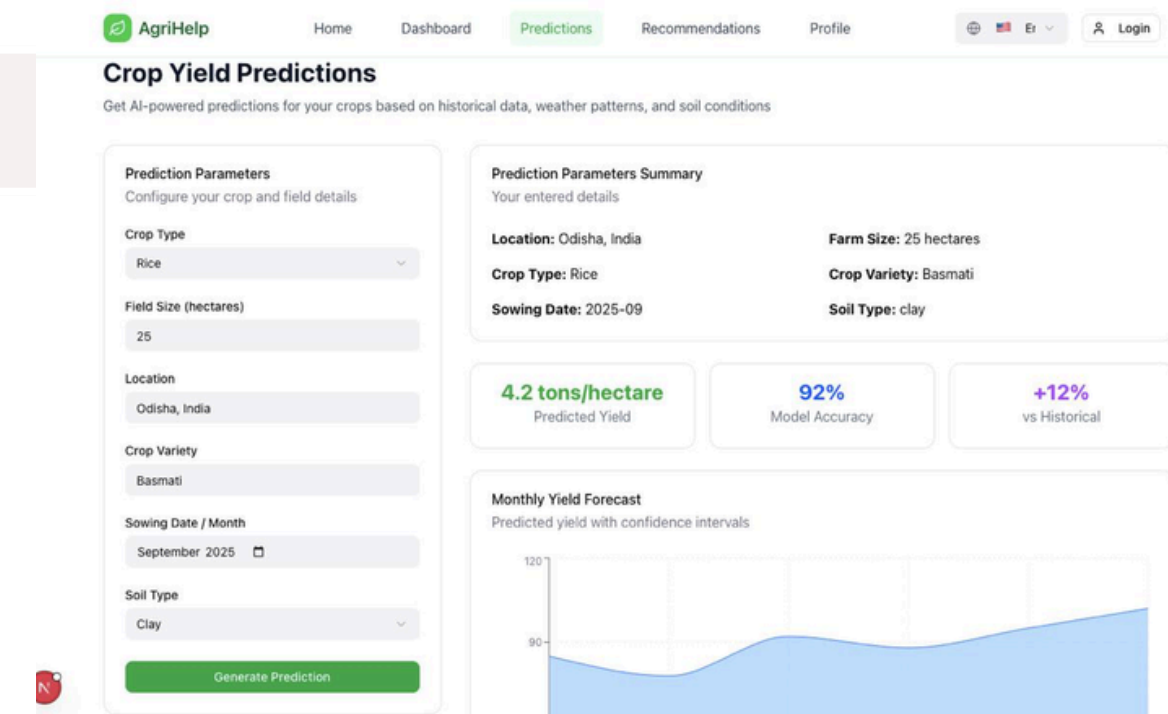
Tech Stack:



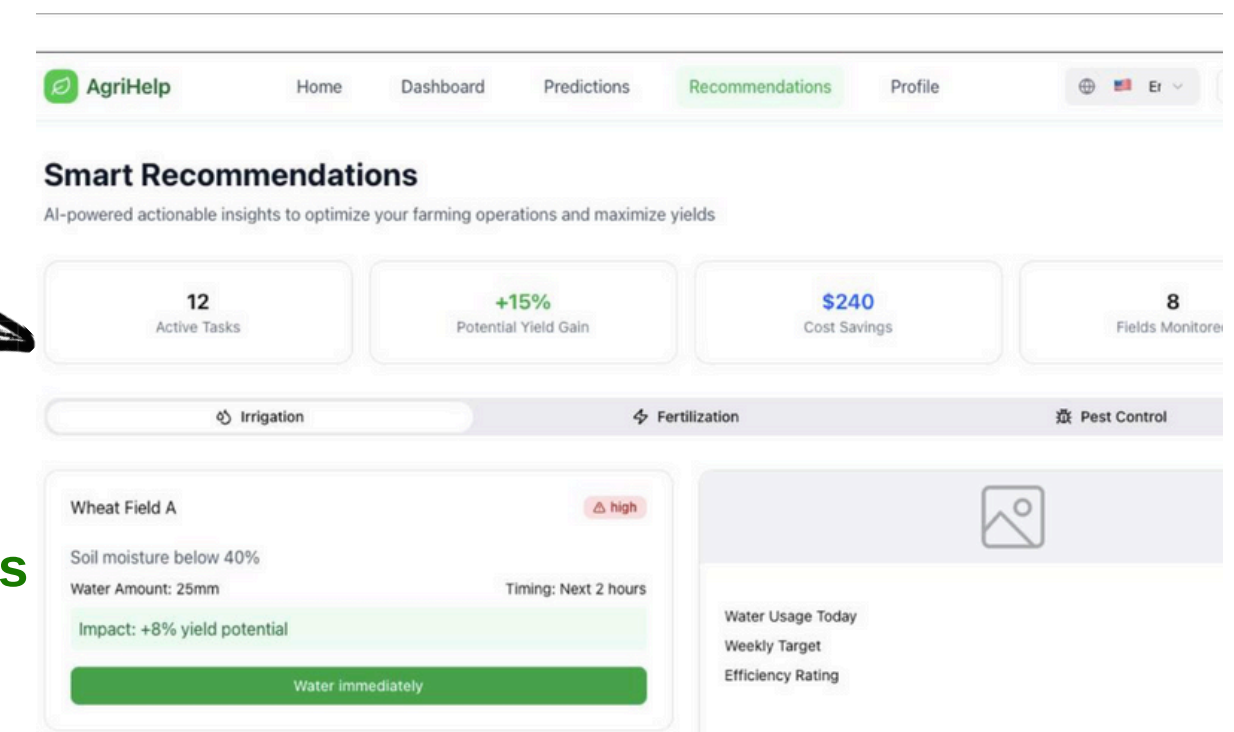
AgriHelp: Technical Approach Flowchart



Predictions



Recommendations



Feasibility Analysis

- 1 Easy integration
- 2 Public datasets usage
- 3 Modular, scalable design
- 4 Multilingual interface
- 5 Cost-effective tech
- 6 Growing market demand
- 7 Secure platform design



Potential Challenges

- 1 Regional data quality
- 2 Model update handling
- 3 Farmer digital literacy
- 4 Data privacy concerns
- 5 API reliability



Viable Strategies

- 1 Pilot testing
- 2 Continuous retraining
- 3 Regional customization
- 4 Simple UI/UX
- 5 Local partnerships
- 6 Strong privacy
- 7 Continuous user training and support



IMPACT AND BENEFITS

Impact:

- Enables 10%+ yield improvements through data-driven decision-making.
- Reduces economic risk and resource wastage with precise irrigation and fertilization guidance.
- Supports over 2 lakh farmers in Odisha with plans to scale nationally.
- Improves farmer income stability and enhances food security.

Benefits:

- **Social:**
Empowers rural farmers with accessible tech in local languages.
- **Economic:**
Cost savings and increased productivity.
- **Environmental:**
Promotes sustainable farming through efficient use of water and nutrients.

Why Us?

Fully automated
AI-powered
real-time
recommendations for
optimized
farming.

Proven 10%+
yield increase
and cost
savings
through
precise
resource use.

Multilingual
support for
diverse
regional
languages
ensuring
accessibility.

RESEARCH AND REFERENCES



Resources followed:

- <https://www.nature.com/articles/s41598-021-97221-7>
- <https://jazindia.com/index.php/jaz/article/view/2242?articlesBySimilarityPage=9>
- <https://www.sciencedirect.com/science/article/pii/S0957417423032803>

Research Paper:

https://www.researchgate.net/publication/38191079_Crop_Yield_Prediction_Using_Machine_Learning_A_Pr pragmatic_Approach

Github Repo: https://github.com/Falsistic/SIH-25_AgriHelp

Live Demo: sih-25-c113.vercel.app/

External tools referred:

- <https://openweathermap.org/api>
- <https://agromonitoring.com/api/current-soil>
- <https://weatherstack.com/documentation>
- <https://docs.tomorrow.io/>

Project Links:

YouTube Video: <https://youtu.be/1Hu7tILozB0>

