Day 3
Smart Borehole Monitor

AI-of-Things for Sustainable Farming in Limpopo

A Hackathon Proposal to address water scarcity and improve agricultural resilience using predictive AI.

THE CRISIS

Unmonitored Water Scarcity

The Problem in Limpopo

Borehole water, the main supply for most farmers, is unreliable and frequently runs out.

Unreliable Performance Performance

Most boreholes lack real-time monitoring. Farmers only discover water scarcity when pumps run dry, often mid-season.

Severe Consequences

The lack of monitoring leads to total crop failure, increased food insecurity, and significant loss of income for farming communities.

Introducing the Smart Borehole Monitor

The Smart Borehole Monitor is an AI-of-Things application prototype designed to proactively manage borehole water resources for small-scale farmers.

AI-Driven

Uses predictive modeling to forecast changes in water levels influenced by temperature, rainfall and water usage.

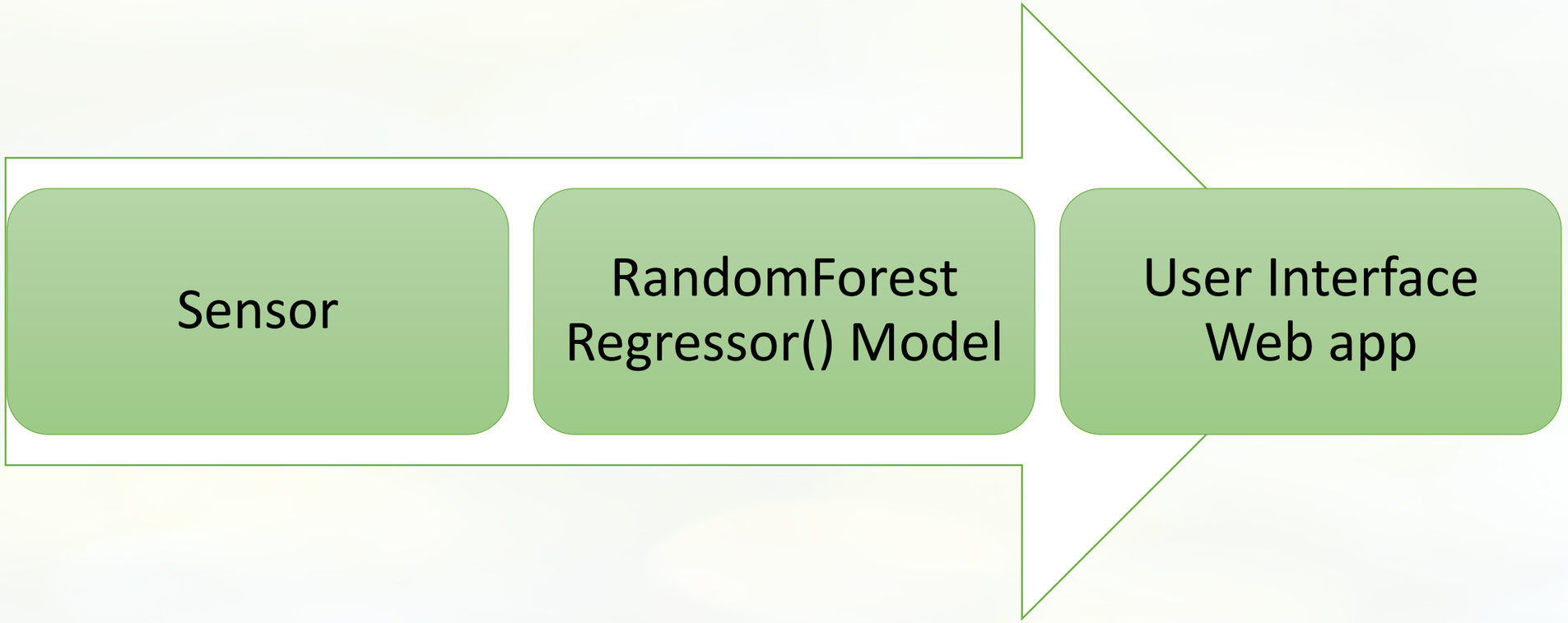
Real-World Applications

Provides farmers with data and alerts to prevent crop failure and give recommendations on water distribution.

Empowering Farmers

Offers an affordable technology and better water management. Offline mode and local language, better security

AI Prediction Inputs (Features)



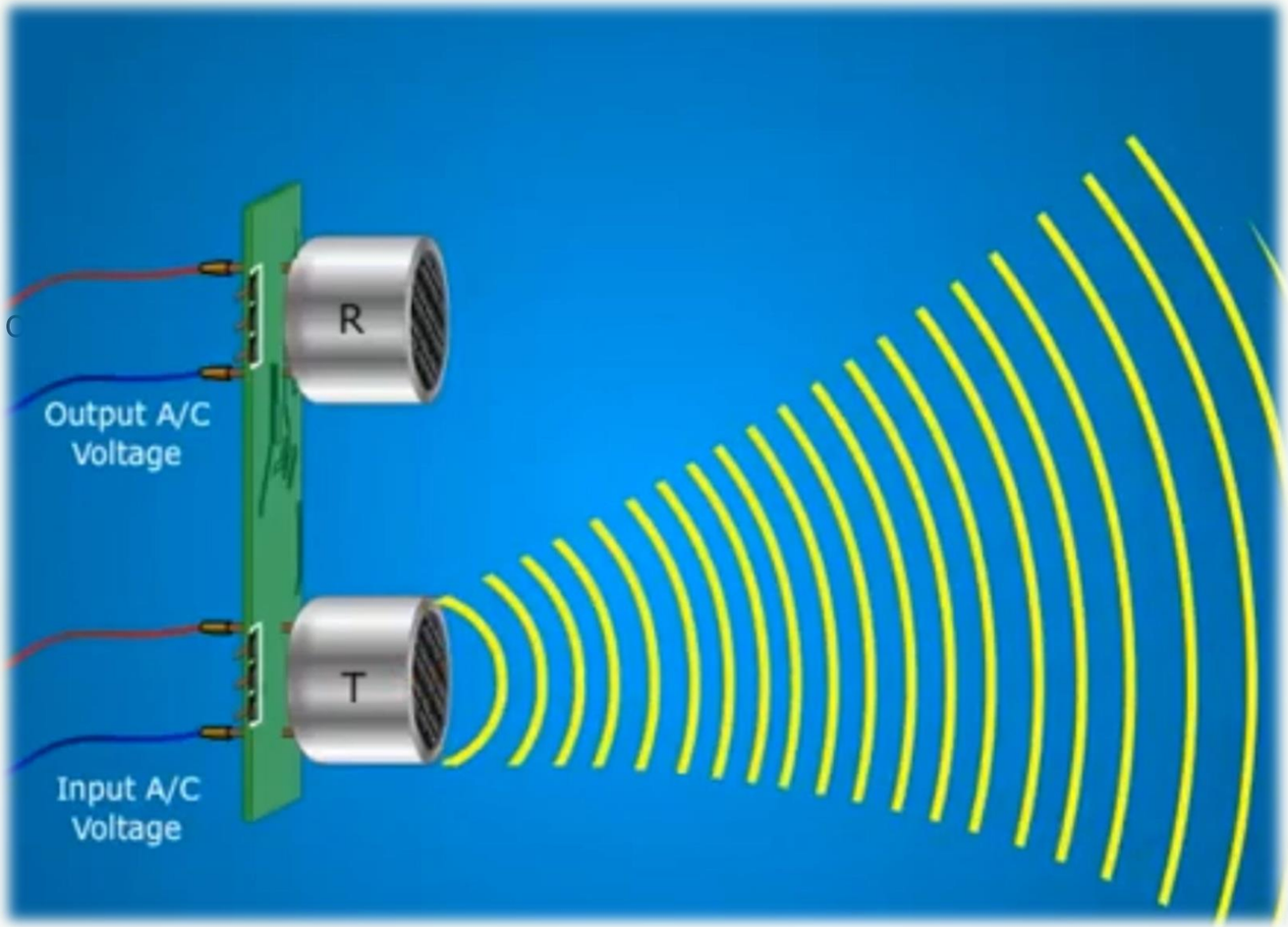
Technical Approach: AI-Powered Simulation

Sensor Agent

Measures how high or low the water levels are using ultrasonic waves. Transmission and receiving of ultrasonic waves using microcontrollers that stores the data in a database. AI is capable c compiling

Prediction Agent

Receives features, and outputs of 7-day forecasts and alerts. This applied to changes in temperature, rainfall and water usage



Financial Overview

Subscription	• Software as a service
Customer sourcing	• Partner affiliations

Competition

- **Uniqueness :Complexity**

Limited AI predictive capabilities

Application Link

https://borehole-lpok.onrender.com/