



PLANT MANAGEMENT SYSTEM



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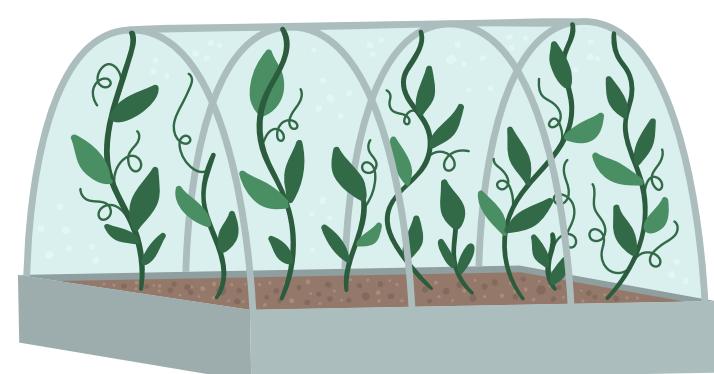


PROBLEM

Lack of accessible preventive care for small-scale plant growers, who often struggle to manually balance complex environmental variables, such as pH, moisture, light, temperature, and nutrients, only reacting when irreversible visual damage to the plant has already occurred. The other agriculture solutions are too expensive and overly complex for small-scale applications.

BENEFICIARIES

- Domestic plant owners and urban gardeners
- Hobbyists seeking data-driven plant care
- Small-scale cultivators and greenhouse operators
- Users wanting accessible, low-cost monitoring



COMPETITORS

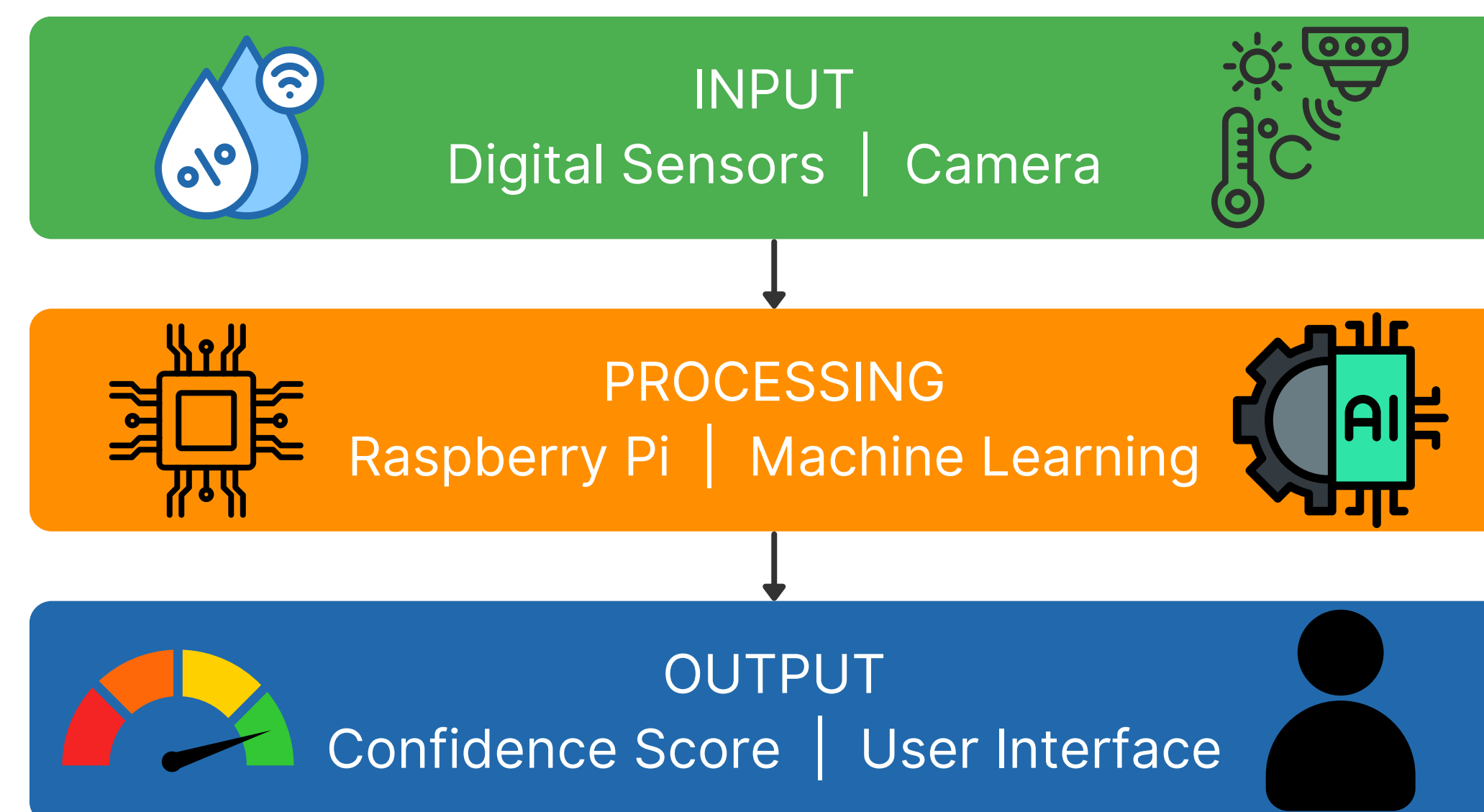
- Xiaomi: Mi Flora
- NEVEANCE soil meter 4 in 1

SOLUTION



Our **Plant Management System** consists on a Raspberry Pi-based IoT system integrating low-cost soil sensors (moisture, pH, light) and a camera for visual analysis. A Machine Learning model detects plant stress (chlorosis, wilting) and generates a confidence score for plant health. Focuses on low cost, local processing, and durability.

SYSTEM ARCHITECTURE

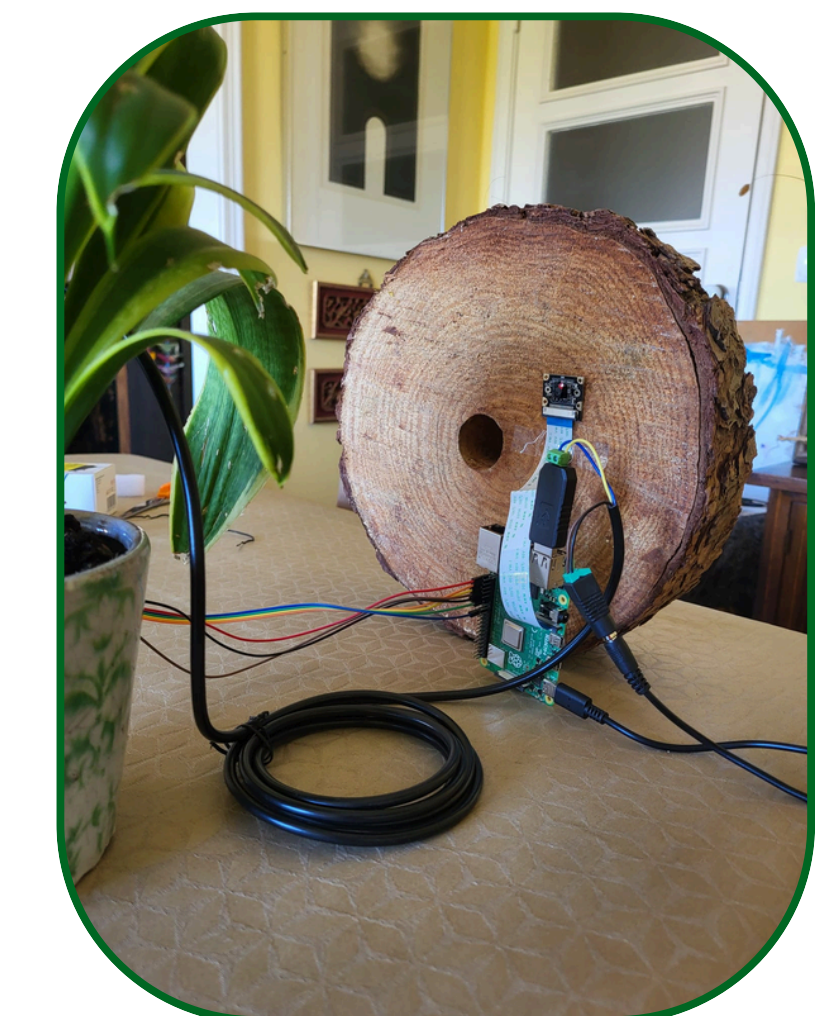


TECHNICAL CHALLENGES

Hardware: Digital sensor integration, signal conditioning, corrosion protection, limited processing power.

Software: Optimize AI models for limited resources, manage data fusion between continuous sensor data and discrete camera images.

PROTOTYPE



VALIDATION METRICS

Hardware: Continuous monitoring of sensor accuracy and calibration drift

Software and AI: Validation of the computer vision models using standard machine learning metrics (Precision, Recall, and F1-score)

System Validation: Empirical validation of the Confidence Score by matching automated alerts against actual plant health to prevent false positives.