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SMART IRRIGATION SYSTEM

BACKGROUND

SmartIrrigation is a next-generation agricultural technology solution designed to intelligently nourish plants using real-time data from soil and environmental sensors, seamlessly blending IoT, AI, and sustainability for precision farming.

Smart Farm

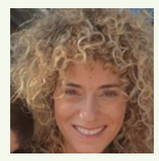
- **Water Waste & Crop Damage**
  - Traditional irrigation methods often lead to water waste, under- or over-watering, and inconsistent crop health.
  - Farmers lack real-time insight into soil and environmental conditions, making efficient irrigation difficult.
- **Why Our System?**
  - Our system uses a controllable robot with soil and environmental sensors to let farmers monitor and manage irrigation remotely and efficiently.

REQUIREMENTS

- Develop a responsive web dashboard.
- Integrate a controllable mobile robot with soil and environmental sensors.
- Enable real-time data monitoring and remote irrigation control with minimal latency.
- Store sensor data and irrigation logs securely in a cloud database.
- Use weather forecasting to support smarter irrigation decisions.

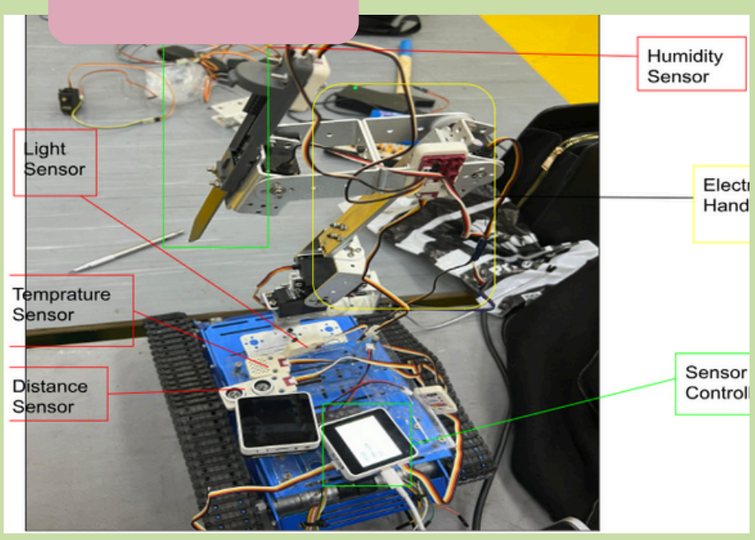
CUSTOMER

KEREN BENSAMHOM MESHRKI

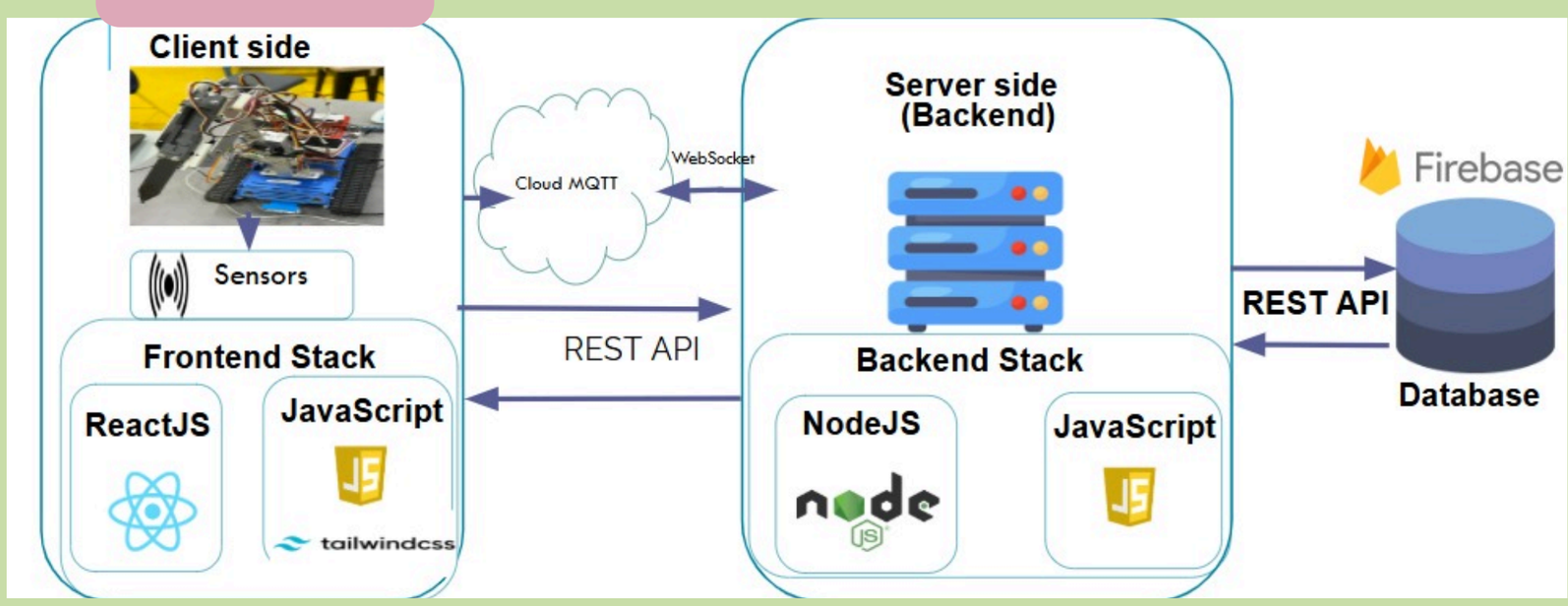


- **System Gaps: Current irrigation lacks real-time alerts and weather integration.**
- **Irrigation Problems: No guidance on watering timing or parameter monitoring.**
- **Alert Issues: Online notifications only; WhatsApp alerts preferred.**

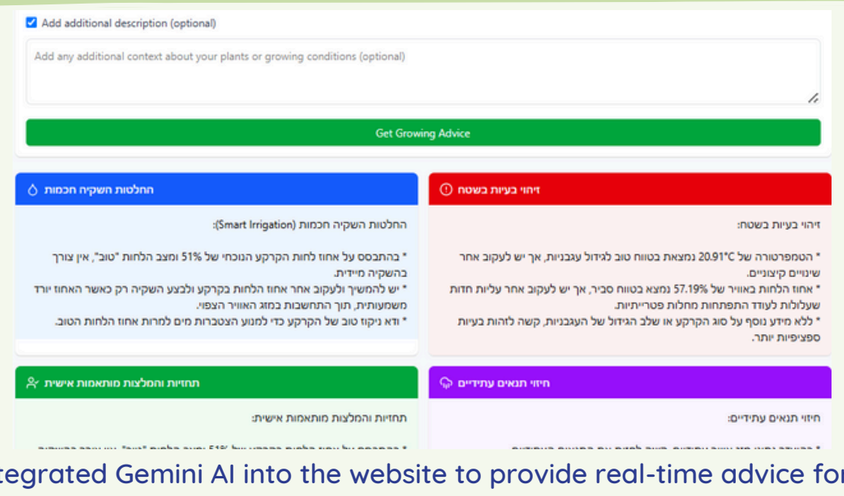
MECHANICS



ARCHITECTURE

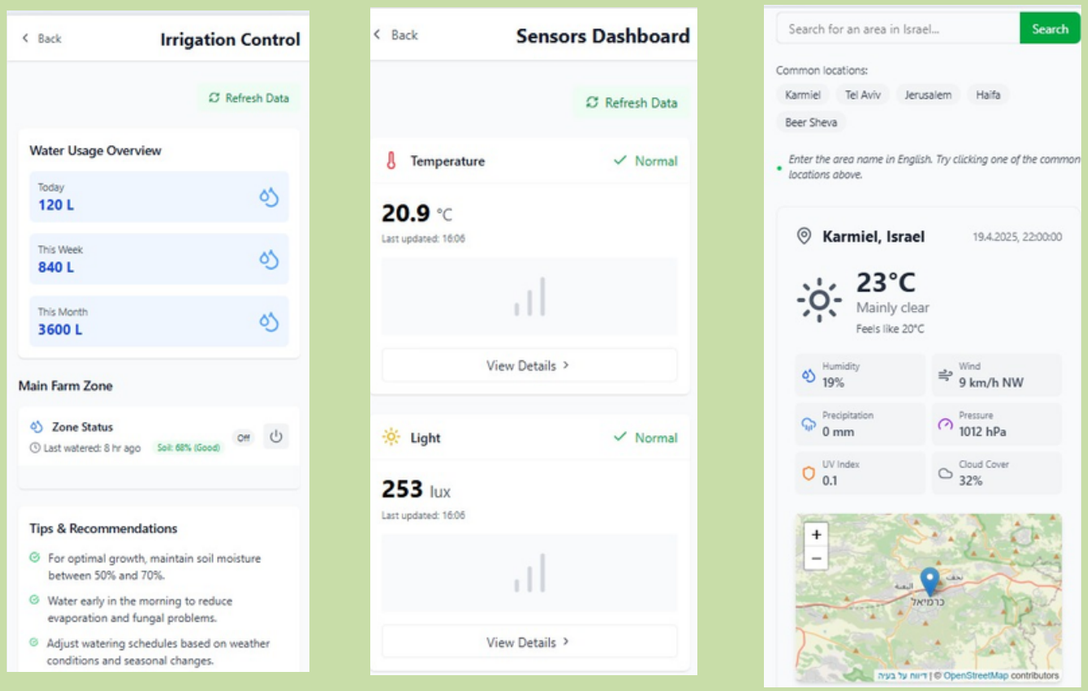


AI EMBEDDING



- Integrated Gemini AI into the website to provide real-time advice for farmers.
- Uses the latest sensor data from Firebase to generate accurate recommendations.
- Farmers select plant types and receive tailored messages via a custom input box.
- Offers immediate guidance on whether irrigation is needed based on current conditions.

LIVE SCREENS



EVALUATIONS

User feedback highlights from field testing:

- clear and intuitive interface appreciated by users
- users expressed willingness to use the system frequently
- features are well-integrated and function smoothly
- engaged both tech-savvy and experienced agricultural professionals
- no critical usability issues were reported during testing

SUS GRAPH