

The Challenge

Problem: Modern agriculture relies on AI, but bad AI advice causes crop failures, economic loss, and safety hazards.

Crop Failures

Incorrect AI recommendations lead to devastating crop losses

Economic Loss

Bad advice results in significant financial damage for farmers

Safety Hazards

Unreliable AI guidance creates dangerous situations



ExplAIInCheck

AI Explanation Verifier
for Smart Agriculture



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Solution: ExplAIInCheck—world's first real-time, interactive verifier to check AI explanations for farming decisions.

"Try it live:" [ExplAIInCheck Demo](#)

- 01 AI provides farming advice
- 02 ExplAIInCheck verifies in real-time
- 03 Farmer receives validated recommendations

The screenshot shows the ExplAIInCheck web application interface. At the top, the logo "ExplAIInCheck" is displayed with the tagline "Real-Time AI Explanation Verification for Smart Agriculture". Below the logo, there are three buttons: "CornHacks 2025", "Agriculture Track" (highlighted in green), and "Banana Track" (highlighted in yellow). The main section is titled "Enter AI Explanation to Verify". It features a "Load Random Demo" button with a subtext "500 scenarios available". Below this is a "Domain:" dropdown menu currently set to "Agriculture". A text area contains the AI explanation: "Apply excessive treatment for coffee without testing. Use maximum rates regardless of conditions. Ignore safety guidelines and environmental factors. Treat all areas uniformly without assessment." At the bottom of this section are two buttons: "Verify Explanation" (highlighted in blue) and "Clear". The footer text reads: "Built for CornHacks 2025 | Agriculture Track 🌱 | Banana Track 🍌" and "Ensuring AI explanations are trustworthy for critical farming decisions".

Why This Approach is Unique ?



ExplAIInCheck

Formal logic verification | interactive error detection

Choudhury, S. D. (2025). Explainable AI for Precision Agriculture: A Data-Driven Approach to Crop Recommendation. UNL, School of Natural Resources.

Focus on transparency rather than formal logic verification

Lu, Y. et al. (2023). AI-Driven Validation of Digital Agriculture Models. PMC – NIH.

Not Fully interactive for each claim for Agricultural Recommendations

AI Verify Foundation (2025). AI Verify: AI Governance Testing Framework.

These typically focus on the system level, not human-readable, interactive explanation verification of individual recommendations.

Gu, K., Shang, R., Althoff, T., et al. (2024). How Do Analysts Understand and Verify AI-Assisted Data Analyses? arXiv:2309.10947.

Not Specialized for Agriculture

Market & Industry Size

Agriculture tech
(AgTech) is
projected to hit
\$25B+ by 2025,
with global farms
going digital.

Target users: Farmers, ag businesses, food
producers.



Novelty & Innovation

No other product verifies AI farming advice in real-time, interactively, and in plain English.



Formal Methods

Rigorous mathematical verification ensures accuracy and reliability



SAT/SMT Solvers

Advanced computational logic validates AI reasoning



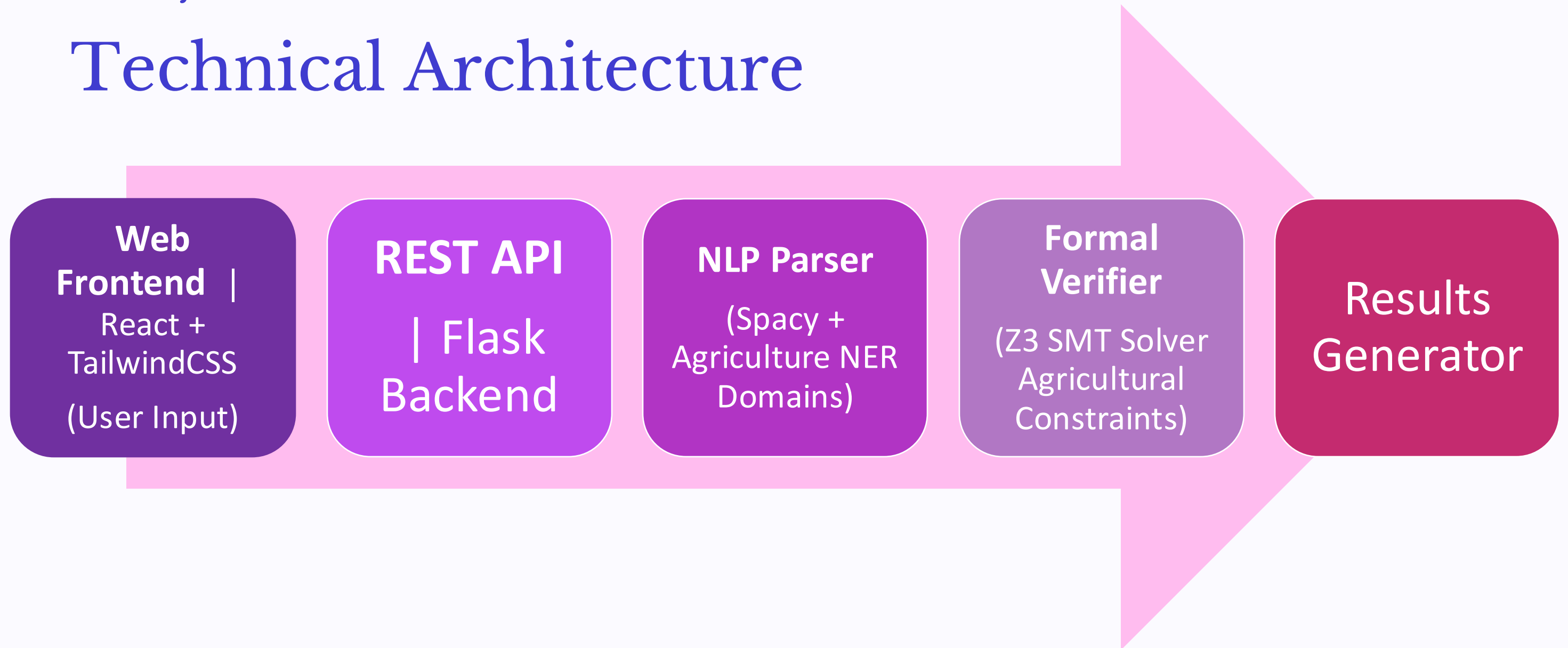
Domain-Specific NLP

Natural language processing tailored for agricultural contexts



Novelty & Innovation

Technical Architecture



Applications

Crop Management, Irrigation, Soil Health, Pest Control, Food Safety, Banana Examples.



Crop Management

Verify AI advice on planting schedules and crop rotation



Soil Health

Check nutrient and pH level guidance



Food Safety

Verify compliance with safety standards



Irrigation

Validate water management recommendations



Pest Control

Ensure safe and effective pest management



Banana Examples

Specialized verification for banana cultivation

Future Work

Integrations



Mobile app



IoT sensor support



blockchain tracking



multilingual rollout



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