

A Vietnamese AI assistant for durian farmers

Enfarm FAMOS AI

Grounded in the farm's own sensor readings and Enfarm's agronomy documentation.

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01 Problem definition

Enfarm's sensors already measure what a durian orchard needs (nutrients, pH and moisture) and plot them in a companion mobile app. But the majority of farmers in Vietnam are elderly women and men, who find the diagrams and technical indicators hard to interpret.

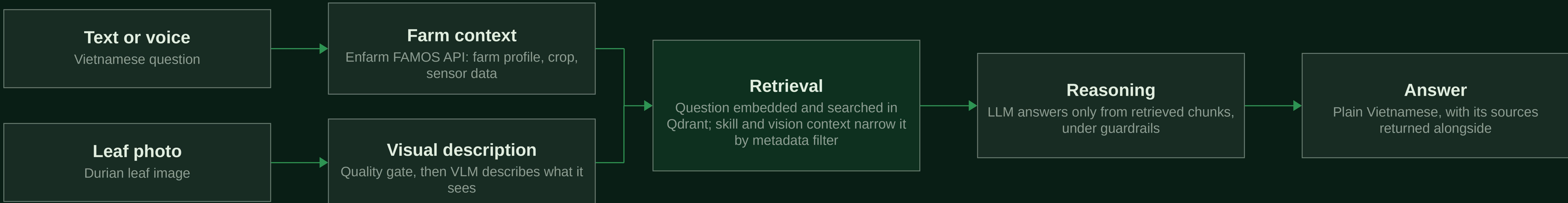
The stakes are not only yield. Over-application of fertiliser sickens the tree and leaches into groundwater, and export approval is granted to a whole growing area rather than to one farm, so a single careless orchard can cost every grower in that area its approval. Advice has to be correct and traceable, which is exactly where a general chatbot fails.

02 Approach

A Python POC with three components: a Vietnamese RAG chatbot over Enfarm's own documentation, leaf-disease screening by description matching, and voice input as an agreed expansion feature.

Farm readings stay out of the vector store and are injected as context. Deterministic skills answer the most common questions straight from those numbers; the LLM is reserved for open questions, and its answers are restricted to retrieved snippets with the source documents returned alongside. Where nothing is retrieved, the bot says so and defers to an expert.

03 Methodology



Sensor readings are injected as context. They are never stored in the vector database.

Intent and context first

The gateway detects intent and pulls farm profile, crop and sensor data before any retrieval runs.

Classification by description

Following Menon and Vondrick, the VLM reports what it sees; Enfarm's documentation decides the class.

Grounded in retrieved sources

Restricted to retrieved snippets and farm context; each answer returns the documents it drew on.

Logged for audit

Each answer and diagnosis is stored in PostgreSQL with inputs, sources and safety flags.

04 Demonstration

VISION · DESCRIPTION MATCHING



Rêu đốm / tảo lá

Đốm tròn nổi, màu nâu cam, bề mặt dạng nhung. This is the description the symptom library matches against.

CHATBOT · SENSOR RULES FIRST, RAG FOR THE REST

Hôm nay có cần tưới thêm không?

Độ ẩm 20cm: 31% · 40cm: 44%. Mưa 24h: 0mm. Nên tưới sáng sớm.

✓ Answered from sensor rules, no LLM call

VOICE · EXPANSION FEATURE

General Vietnamese · durian vocabulary boosted · accents deferred

Cây sầu riêng bị xì mù thì xử lý thế nào?

✓ Farmer confirms the transcript before sending

05 Evaluation

Human evaluation first: an Enfarm agronomist reviews the answers, and UAT is run with elderly Vietnamese farmers.

- Response quality**
Do answers match Enfarm's source documents
- Rejection capability**
Are out-of-scope questions declined
- Understandability**
Can an elderly farmer actually follow it
- Field validation**
UAT plus a field trip to Buôn Ma Thuột

06 Limitations

- Proof of concept, not production**
Delivered with a mock FAMOS client. Live integration, authentication and scaling are out of scope.
- No trained classifier**
VLM description matching, not a model trained on a labelled dataset. Similar leaf spots are the known failure mode.
- Durian only, thin test sets**
Screening covers 8 canonical classes: 6 leaf disorders plus healthy and unknown.

