



UNIVERSITY OF
CALGARY

Open Agricultural Intelligence: Farmers Have Data Everywhere; But No Way to Use It!

Yasaman Honarparvar

Supervisor: Dr. Sara Saeedi

ESE Dept, University of Calgary

ESE Research Day 2026 May 14

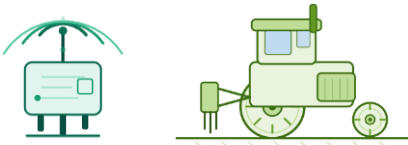


Ubisensing&AI

The Challenge is Not Only the Data!

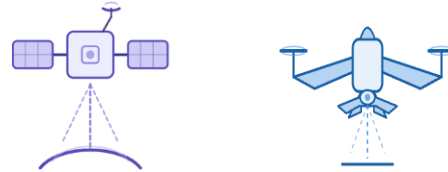
IoT sensor

In-field wireless sensing /
machineries



Earth observation

Sentinel-2 / MODIS /
Landsat / UAVs



Gov't Climate APIs

DataECCC / USDA /
NASA API



Different platforms — different formats — different paywalls







“When decisions matter, farmers still end up guessing.”









Our Solution: OpenAgSense



OPEN • INTEROPERABLE • AI-READY

STATE OF THE ART		
	Fragmented Systems	✗
	Closed & Proprietary	✗
	Hard to Integrate	✗
	Raw Data Silos	✗
	Limited Reuse (Not FAIR)	✗
	Manual & Siloed Processing	✗



OPENAGSENSE		
	Interoperable	✓
	Open Standards	✓
	Spatio-Temporal AI-ready Data	✓
	Agentic Intelligence	✓
	FAIR Data	✓
	Transparent Governance	✓



<https://ubisensinglab.github.io/openagsense/>



Empowering farmers with trusted intelligence




Geo-LLM Multi Agents: Ask a Question -> Get a Map



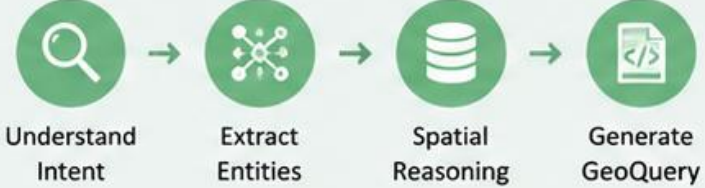
QUESTION
Plain language
from the farmer



"Show me wheat fields with low soil moisture near irrigation canals."




GEOQUERY
Multi-agent spatial
query processing

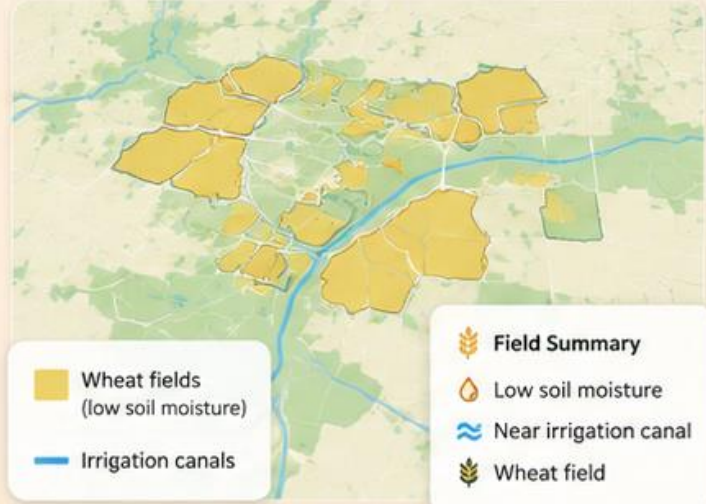


Understand Intent → Extract Entities → Spatial Reasoning → Generate GeoQuery

```
SELECT ?field WHERE {  
  ?field a ex:WheatField ;  
  ex:soilMoisture "low" ;  
  ex:nearbyFeature ex:IrrigationCanal .  
}
```



MAP
Actionable geospatial
insights on a map



- Wheat fields (low soil moisture)
- Irrigation canals
- Field Summary
- Low soil moisture
- Near irrigation canal
- Wheat field

Our Impact & Vision: Toward Inclusive and Open Digital Agriculture

Accessibility

- Farmers use plain language instead of GIS tools

Trust

- Farmers retain ownership of their data
- Knowledge-driven agents deliver transparent, verifiable results

Scalability

Open standards allow expansion across regions and platforms

“Farmers should benefit from the data generated from their field”



Thank you for your Attention!

Yasaman Honarparvar
University of Calgary
yasaman.honarparvar@ucalgary.ca

ESE ResearchDay 2026

