IBM HACKATHON PROJECT

AI AGENT FOR SMART FARMING ADVICE

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OUTLINE

- Problem Statement
- Technology used
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PROBLEM STATEMENT

Small-scale farmers struggle to access timely and localized agricultural information due to fragmented data sources, language barriers, and limited digital literacy. Critical farming decisions regarding crop selection, weather updates, pest control, and market prices often rely on outdated or generic advice, leading to reduced yields and financial losses. Traditional extension services have limited reach and cannot provide real-time, location-specific guidance needed for optimal decision-making.



TECHNOLOGY USED

IBM cloud lite services

Natural Language Processing (NLP)

Retrieval Augmented Generation (RAG)

IBM Granite model



IBM CLOUD SERVICES USED

- IBM Cloud Watsonx Al Studio
- IBM Cloud Watsonx Al runtime
- IBM Cloud Agent Lab
- IBM Granite foundation model



WOW FACTORS

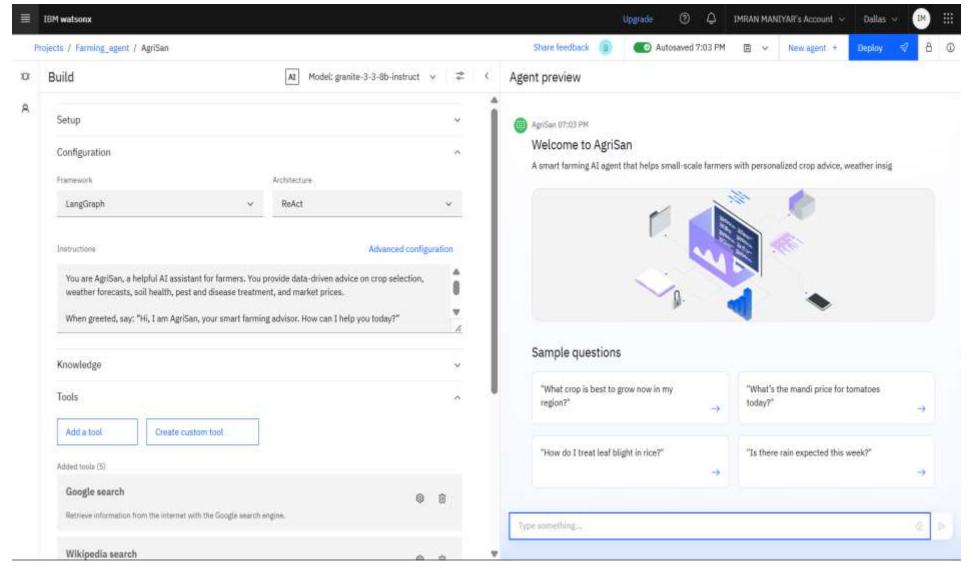
- This agent will significantly reduce research time, improve the quality of literature reviews, help early-stage researchers find direction, and foster interdisciplinary collaboration by making knowledge more accessible and actionable.
- Unique features:
 - Semantic search across research papers, journals, and datasets
 - Auto-summarization of selected papers
 - Citation and reference analysis to trace influence
 - Recommendation of research papers based on a user's current topic
 - Trend analysis over time for specific keywords or domains
 - Collaboration mapping: suggests potential co-authors or institutions based on similar research interests



END USERS

- Academic Researchers
- farmers or agricultural stakeholders
- Research Institutions and Universities
- Educators







Agent preview

a more specific recommendation, I would need to know your location and soil conditions.

► How did I get this answer?



You: 07:04 PM

what are the soil types and fertilizers



AgriSan 07:04 PM

India has a variety of soil types, including alluvial, black soil, red soil, laterite, and mountain soil.

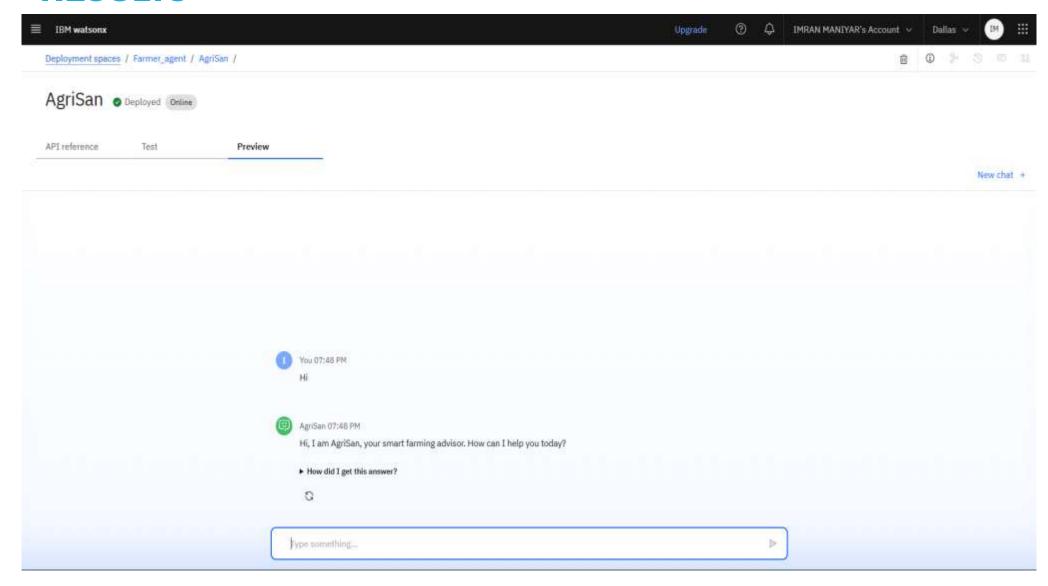
- 1. Alluvial soils are fertile and found in the Ganges, Indus, and Brahmaputra river basins. They are suitable for growing rice, wheat, sugarcane, and cotton.
- 2. Black soil, or regur soil, is high in iron and magnesium but low in humus. It's good for millets, pulses, and oilseeds, especially in drier regions.
- 3. Red soil is suitable for a variety of crops, including millets, pulses, cotton, and sugarcane. It's rich in iron oxide, giving it a reddish color.
- 4. Laterite soil is typically found in the Western Ghats and is rich in iron and aluminum compounds. It's suitable for growing tea, coffee, and spices.
- 5. Mountain soil varies greatly but often supports tea, coffee, and fruits.

As for fertilizers, the type and amount needed depend on the soil test results. Generally, a balanced use of nitrogen, phosphorus, and potassium (NPK) fertilizers is recommended. Organic manures like compost and vermicompost can also significantly improve soil health and crop yield.



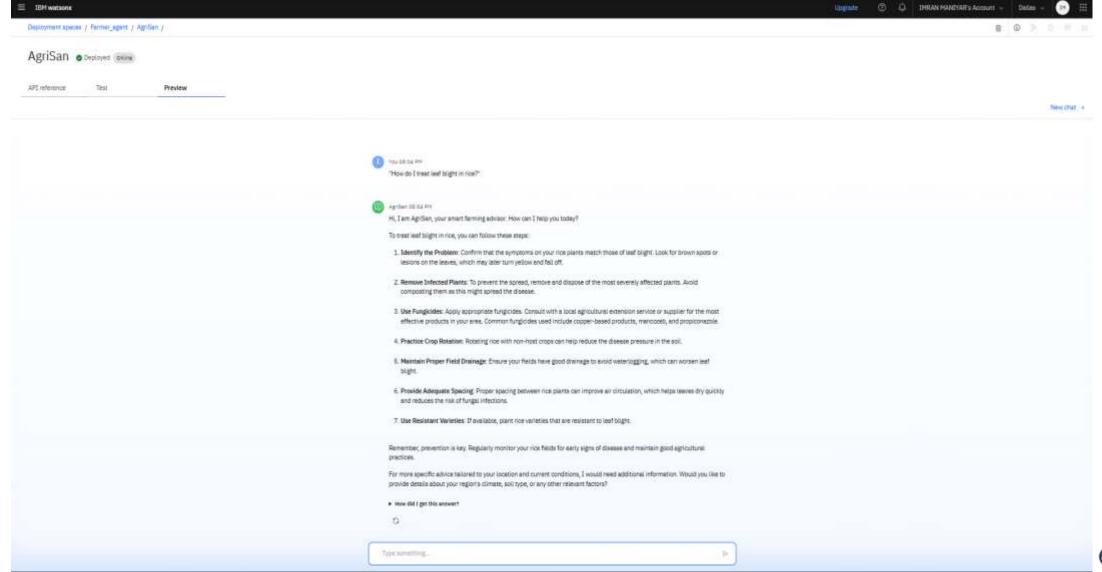








Deployed AI Agent





CONCLUSION

Summarize the findings and discuss the effectiveness of the proposed solution. Highlight any challenges encountered during the implementation and potential improvements. Emphasize the importance of accurate bike count predictions for ensuring a stable supply of rental bikes in urban areas.



GITHUB LINK

https://github.com/Imranmaniyar007/AgriSan-Al-Agent.git



FUTURE SCOPE

- Integration with IoT sensors for real-time soil and moisture data
- Voice-based interaction for illiterate users
- Expansion to other regions and languages
- Use of edge computing for offline access
- Collaboration with agritech startups and government schemes



IBM CERTIFICATIONS

In recognition of the commitment to achieve professional excellence **IMRAN MANIYAR** Has successfully satisfied the requirements for: Getting Started with Artificial Intelligence Issued on: Jul 16, 2025 Issued by: IBM SkillsBuild Verify: https://www.credly.com/badges/12d3e495-a9cf-4a90-a265-6c4f9d3343db



IBM SkillsBuild

Completion Certificate



This certificate is presented to

IMRAN MANIYAR

for the completion of

Lab: Retrieval Augmented Generation with LangChain

(ALM-COURSE_3824998)

According to the Adobe Learning Manager system of record

Completion date: 26 Jul 2025 (GMT)

Learning hours: 20 mins



THANK YOU

