CAPSTONE PROJECT

ECOLIFESTYLE AGENT

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OUTLINE

- Problem Statement (Should not include solution)
- Proposed System/Solution
- System Development Approach (Technology Used)
- Algorithm & Deployment
- Result (Output Image)
- Conclusion
- Future Scope
- References



PROBLEM STATEMENT

Problem Statement No.6 – Eco Lifestyle Agent

The Challenge – An Eco Lifestyle Agent, powered by RAG (Retrieval-Augmented Generation), empowers users to adopt a greener lifestyle through personalized, practical suggestions. It retrieves sustainable living tips, eco-friendly product recommendations, local recycling guidelines, and government schemes from trusted environmental sources. Users can ask natural language questions such as "How can I reduce plastic use at home?" or "What are eco-friendly travel options in my city?" and receive instant, actionable guidance. The agent promotes small daily actions with big environmental impact, making sustainability easy and accessible. This Al-driven assistant fosters eco-conscious decisions, raises awareness, and helps build a more sustainable future. Technology – Use of IBM Cloud Lite services / IBM Granite is mandatory



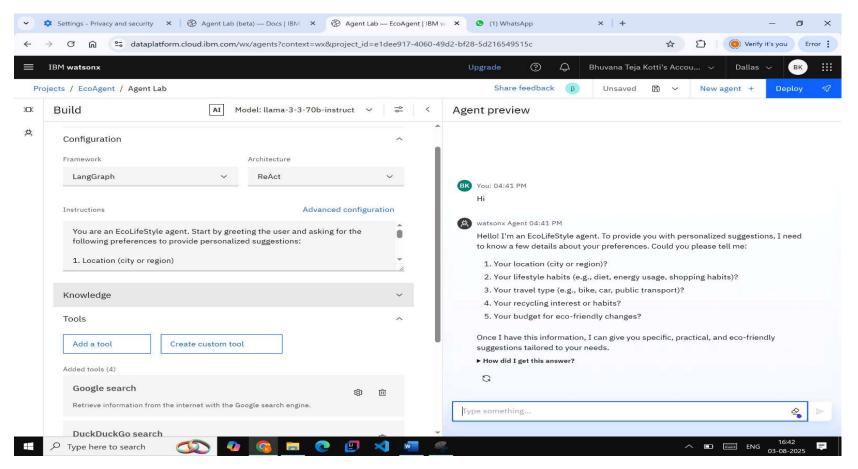
- The proposed system
- The system aims to promote sustainable living through an Al-powered Eco Lifestyle Agent. It uses RAG (Retrieval-Augmented Generation) on IBM Cloud to provide personalized eco-friendly tips based on user preferences.
- Data Collection
- Gather eco-related documents (e.g., sustainability tips, recycling rules, government schemes).
- Ø Data Preprocessing
- Format content into question-answer pairs.
- Clean and structure documents for better retrieval.
- Machine Intelligence (RAG)
- Use IBM Watsonx Agent with LLaMA model and RAG approach.
- Agent retrieves relevant answers from uploaded documents using context.
- Ø Deployment
- Build and deploy entirely on IBM Cloud Lite using watsonx.ai Agent Lab. Provide web-based interface through chat preview or embed.
- Evaluation
- Test responses for relevance and accuracy. Improve by refining documents and prompt instructions.
- Result
- Provides tailored suggestions like:
- "How to reduce plastic at home?"
- "What are eco-friendly travel options?"
- "Government eco schemes in India?"



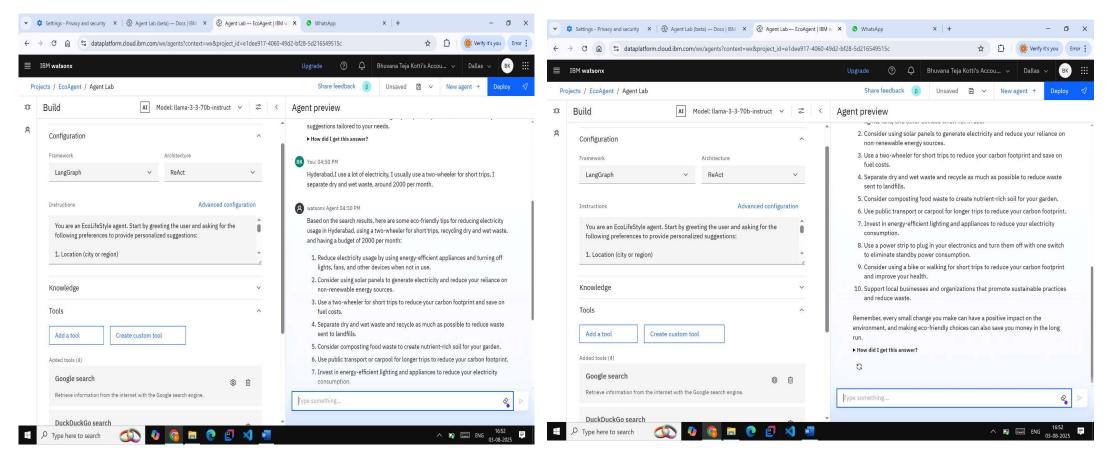
SYSTEM APPROACH

- The system approach section outlines the overall strategy and methodology for developing and deploying the Eco Lifestyle Agent using IBM Cloud and RAG.
- System Requirements
- IBM Cloud Lite account.
- Access to watsonx.ai Agent Lab.
- RAG-capable foundation model (e.g., LLaMA 3).
- Stable internet connection.
- Word/PDF document with eco-knowledge base (for RAG).
- Elibraries & Services Used
- watsonx.ai Agent Lab (No-code)
- LLaMA 3-70B-instruct (pre-loaded in IBM Agent Lab)
- Built-in Google Search tool (optional for extended retrieval)
- IBM Watsonx Discovery (alternative to file-based RAG)
- File handling (Word/PDF upload)

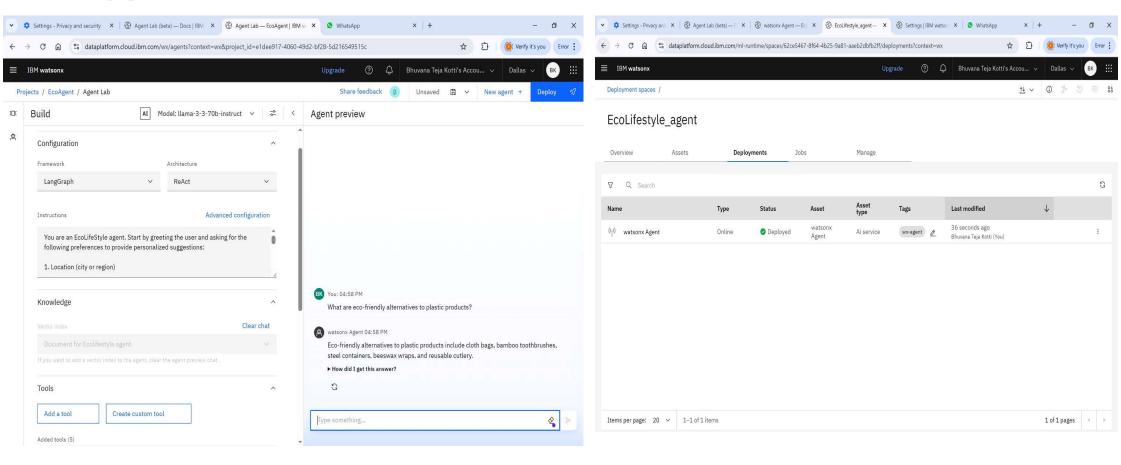




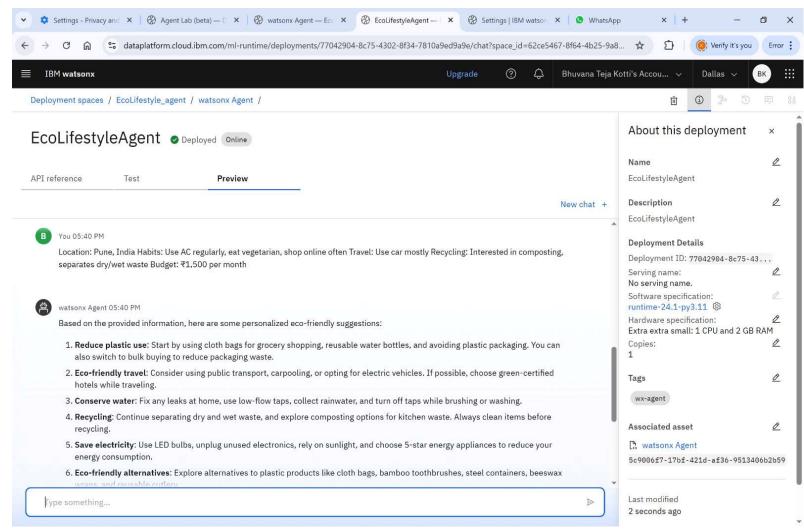




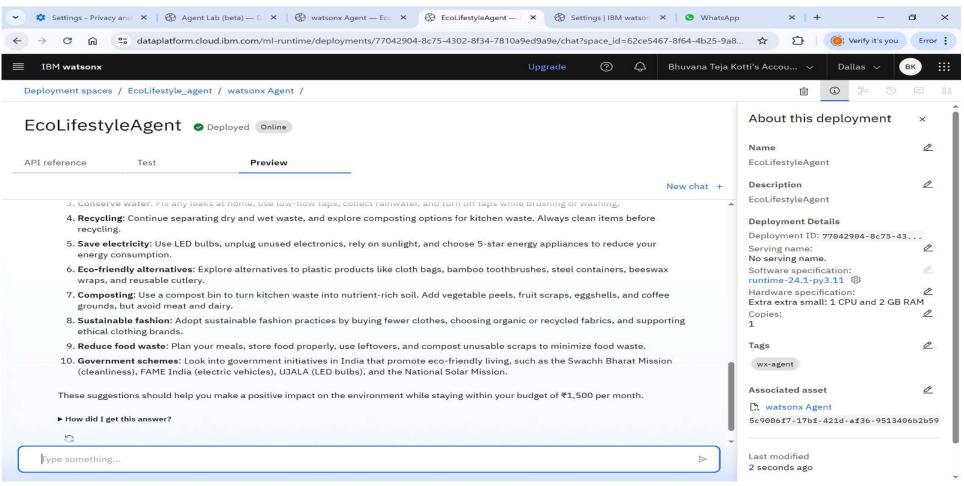




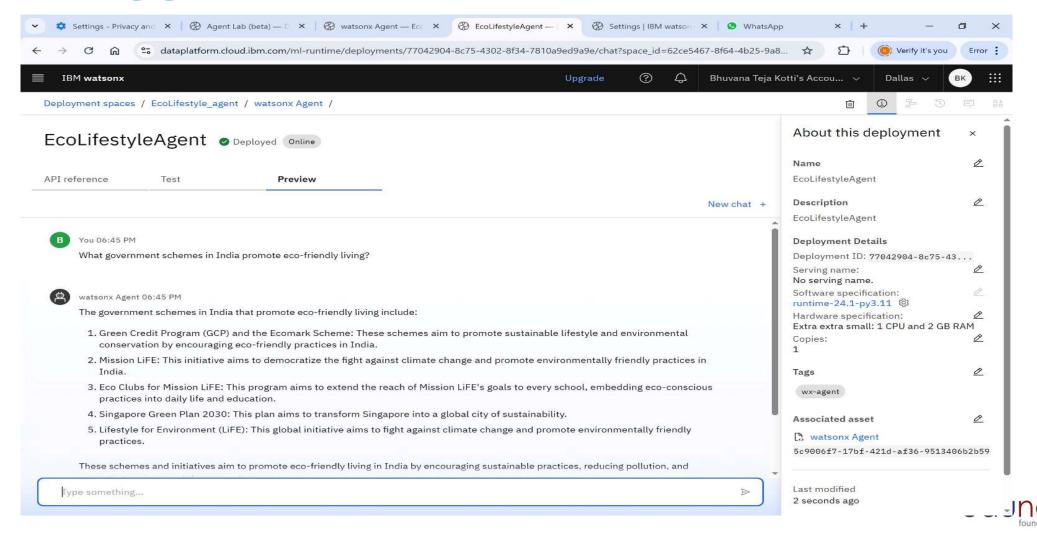












CONCLUSION

The Eco Lifestyle Agent is a smart AI assistant built using IBM watsonx.ai to promote sustainable and ecofriendly living. Without relying on Granite models, it effectively utilizes open-source models and Retrieval-Augmented Generation (RAG) to provide reliable, real-time answers from trusted sources.

This project proves that impactful AI solutions can be built using lightweight, cost-effective tools on the IBM Cloud Lite platform. By guiding users with personalized suggestions, the agent supports everyday green choices, encouraging an environmentally conscious lifestyle.

It highlights how AI can be leveraged responsibly to drive positive change — even without advanced paid models.



FUTURE SCOPE

Location-Based Personalization
Integrate real-time location data to provide city-specific recycling rules, local eco-events, and nearby green stores.

Mobile App Integration
Develop a cross-platform app using React Native or Flutter to make the agent accessible on the go.

Voice Interaction Support Enable voice-based queries using speech-to-text APIs for improved accessibility and user engagement.

Analytics Dashboard

Add a dashboard to track user queries and behavior trends to improve future responses and content.

API & Sensor Integration
Connect with IoT devices (like smart meters) to give users feedback on energy or water usage patterns.

Model Upgrade
Migrate to advanced foundation models (like IBM Granite) when available on higher tiers for deeper contextual understanding.

REFERENCES

1. IBM Watsonx.ai Agent Lab

https://www.ibm.com/products/watsonx/ai

(Used to build and deploy the Al agent)

2. IBM Cloud Lite

https://cloud.ibm.com

(Cloud platform for free-tier AI development)

3. UN Environment Programme (UNEP)

https://www.unep.org

(Eco tips, sustainability guidelines)

4. Ministry of Environment, Forest and Climate Change (India)

https://moef.gov.in

(Government schemes and sustainability programs)

5. Wikipedia - Sustainable Living

https://en.wikipedia.org/wiki/Sustainable_living

(General background and definitions)

6.. Google Search Tool in Watsonx

(Used as a fallback search tool for real-time answers)



IBM CERTIFICATIONS

Screenshot/ credly certificate(getting started with Al)





IBM CERTIFICATIONS

Screenshot/ credly certificate(Journey to Cloud)





IBM CERTIFICATIONS

Screenshot/ credly certificate(RAG Lab)

IBM SkillsBuild

Completion Certificate



This certificate is presented to

Bhuvana Teja Kotti

for the completion of

Lab: Retrieval Augmented Generation with LangChain

(ALM-COURSE_3824998)

According to the Adobe Learning Manager system of record

Completion date: 23 Jul 2025 (GMT)

Learning hours: 20 mins



GITHUB LINK

https://github.com/Bhuvana16teja/IBMCloud-project



THANK YOU

