
CAPSTONE PROJECT

ECO LIFESTYLE AGENT

Presented By:

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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 AI-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.

PROPOSED SOLUTION

- The system aims to promote sustainable living through an AI-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).
-  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.
-  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
 - The AI agent answers queries like:> “How to reduce plastic at home ?” “What are the eco-friendly travel options in my city ?” “List Indian government schemes for a sustainable lifestyle.”
 - It encourages eco-conscious decision-making through relevant, personalized, and accessible suggestions.

SYSTEM APPROACH

-  System Prerequisites
 - IBM Cloud Lite subscription.
 - Access to watsonx.ai Agent Builder.
 - Support for RAG-enabled foundation models (e.g., LLaMA 3).
 - Reliable internet connectivity.
 - Prepared eco-knowledge base file (PDF/Word) for reference-based response generation.
-  Libraries & 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)

RESULT

The screenshot displays the IBM watsonx Agent Lab interface in a web browser. The browser's address bar shows the URL: `https://datapatform.cloud.ibm.com/wx/agents?context=wx&project_id=37cd09a0-bb40-4ddc-86c8-6799d2a7c9ef`. The interface is divided into two main sections: 'Build' on the left and 'Agent preview' on the right.

Build Section:

- Model:** llama-3-3-70b-instruct
- Framework:** LangGraph
- Architecture:** ReAct
- Instructions:** You are an EcoLifeStyle agent. Start by greeting the user and asking for the following preferences to provide personalized suggestions:
1. Location (city or region)
- Knowledge:** (Empty section)
- Tools:** Includes 'Add a tool' and 'Create custom tool' buttons. Below, 'Added tools (4)' are listed, with 'Google search' being the first tool, described as 'Retrieve information from the Internet with the Google search engine.'

Agent preview Section:

- User:** You: 04:40 PM
hi
- Agent:** watsonx Agent 04:40 PM
Hello! I'm an EcoLifeStyle agent. To provide you with personalized suggestions, I need to know a few details about your preferences. Could you please tell me:
1. Your location (city or region)?
2. Your lifestyle habits (e.g., diet, energy usage, shopping habits)?
3. Your travel type (e.g., bike, car, public transport)?
4. Your recycling interest or habits?
5. Your budget for eco-friendly changes?
Once I have this information, I can give you specific, practical, and eco-friendly suggestions tailored to your needs.
► How did I get this answer?

The bottom of the image shows a Windows taskbar with the date and time: 16:41, 03-08-2025.

Agent Lab (beta) — Docs | IBM watsonx Agent Lab — EcoLifeStyleAgent-1

https://dataplatform.cloud.ibm.com/wx/agents?context=wx&project_id=37cd09a0-bb40-4ddc-86c8-6799d2a7c9ef

IBM watsonx Upgrade Lakshmi Muthavarapu's Ac... Dallas LM

Projects / EcoLifeStyleAgent-1 / Agent Lab Share feedback Unsaved New agent + Deploy

Build

AI Model: llama-3-3-70b-instruct

Setup

Configuration

Framework: LangGraph Architecture: ReAct

Instructions [Advanced configuration](#)

You are an EcoLifeStyle agent. Start by greeting the user and asking for the following preferences to provide personalized suggestions:

1. Location (city or region)

Knowledge

Tools

[Add a tool](#) [Create custom tool](#)

Added tools (4)

Google search

Retrieve information from the internet with the Google search engine.

DuckDuckGo search

Agent preview

budget of 2000 per month:

1. Consider staying in homestays or budget-friendly hotels that offer eco-friendly options, such as Treebo Trend or Airbnb.
2. Look for vegetarian-friendly restaurants and cafes that offer sustainable and affordable options, such as Papaji Ka Dhaba.
3. Use public transport or walk/bike for short trips to reduce carbon footprint.
4. Separate dry and wet waste and recycle as much as possible.
5. Consider buying groceries from local markets or stores that offer organic and sustainable options.
6. Use reusable bags and containers to reduce plastic waste.
7. Look for eco-friendly products and services that fit within your budget, such as eco-friendly cleaning products or sustainable clothing.

Some specific recommendations for Hyderabad include:

- Visiting the Hyderabad Central Market for fresh produce and sustainable shopping options
- Trying out vegetarian-friendly restaurants like Papaji Ka Dhaba or Govind Dhaba
- Using the Hyderabad Metro or public transport for commuting
- Exploring the city's many parks and green spaces, such as the Hyderabad Botanical Gardens or the Necklace Road

I hope these tips are helpful! Let me know if you have any other questions.

► How did I get this answer?

↻

Type something...

31°C Partly sunny 16:52 03-08-2025

Agent Lab (beta) — Docs | IBM watsonx Agent Lab — EcoLifeStyleAgent-1

https://dataplatform.cloud.ibm.com/wx/agents?context=wx&project_id=37cd09a0-bb40-4ddc-86c8-6799d2a7c9ef

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Projects / EcoLifeStyleAgent-1 / Agent Lab Share feedback β Unsaved New agent + Deploy

Build

AI Model: llama-3-3-70b-instruct

Configuration

Framework: LangGraph Architecture: ReAct

Instructions [Advanced configuration](#)

You are an EcoLifeStyle agent. Start by greeting the user and asking for the following preferences to provide personalized suggestions:

1. Location (city or region)

Knowledge

Vector index: Ecolifestyle agent [Clear chat](#)

If you want to add a vector index to the agent, clear the agent preview chat.

Tools

[Add a tool](#) [Create custom tool](#)

Added tools (5)

Google search

Retrieve information from the internet with the Google search engine.

Agent preview

LM You: 04:58 PM

What is sustainable fashion?

watsonx Agent 04:58 PM

Sustainable fashion refers to efforts within the fashion industry to reduce its environmental impacts, protect workers producing garments, and uphold animal welfare. It encompasses a wide range of factors, including cutting CO2 emissions, addressing overproduction, reducing pollution and waste, supporting biodiversity, and ensuring that garment workers are paid a fair wage and have safe working conditions. The movement believes that clothing companies should incorporate environmental, social, and ethical improvements on management's agenda, such as increasing the value of local production and products, prolonging the lifecycle of materials, and reducing waste. However, critics doubt the effectiveness of this approach, citing the fast fashion business model as a major obstacle to sustainability.

► How did I get this answer?

Type something...

31°C Partly sunny Search 16:59 03-08-2025

Agent Lab (beta) — Docs | IBM watsonx Agent Lab — EcoLifeStyleAgent-1 x

https://dataplatform.cloud.ibm.com/wx/agents?context=wx&project_id=37cd09a0-bb40-4ddc-86c8-6799d2a7c9ef

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Projects / EcoLifeStyleAgent-1 / Agent Lab Share feedback β Unsaved New agent + Deploy

Build

AI Model: llama-3-3-70b-instruct

Configuration

Framework: LangGraph Architecture: ReAct

Instructions [Advanced configuration](#)

You are an EcoLifeStyle agent. Start by greeting the user and asking for the following preferences to provide personalized suggestions:

1. Location (city or region)

Knowledge [Clear chat](#)

Vector Index: Ecolifestyle agent

If you want to add a vector index to the agent, clear the agent preview chat.

Tools

[Add a tool](#) [Create custom tool](#)

Added tools (5)

Google search

Retrieve information from the internet with the Google search engine.

Agent preview

How did I get this answer?

LM You: 05:00 PM

What government schemes in India promote eco-friendly living?

watsonx Agent 05:00 PM

The government schemes in India that promote eco-friendly living include:

1. Green Credit Program (GCP) and the Ecomark Scheme: These schemes aim to promote sustainable lifestyle and environmental conservation by encouraging eco-friendly practices in India.
2. Eco Clubs for Mission LIFE: This initiative aims to extend the reach of Mission LIFE's goals to every school, embedding eco-conscious practices into daily life and education.
3. Lifestyle for Environment (LIFE): This is a global initiative to fight against climate change, and by 2028, at least 80% of India's villages and urban local bodies are expected to be environmentally friendly.

These schemes and initiatives are designed to promote sustainable development, reduce pollution, and protect the environment in India.

How did I get this answer?

Type something...

Agent Lab (beta) — Docs | IBM watsonx

watsonx Agent — EcoLifeStyleAgent

EcoLifeStyleAgent — Spaces | IBM watsonx

Settings | IBM watsonx

https://dataplatform.cloud.ibm.com/ml-runtime/spaces/bd0b6dd3-d3eb-4d59-839e-9ed88a8264c5/deployments?context=wx

IBM watsonx

Upgrade

Lakshmi Muthavarapu's Ac...

Dallas




LM

Deployment spaces /

EcoLifeStyleAgent

OverviewAssetsDeploymentsJobsManage

Search


Name	Type	Status	Asset	Asset type	Tags	Last modified
 watsonx Agent	Online	 Deployed	watsonx Agent	AI service	 wx-agent	34 seconds ago Lakshmi Muthavarapu (You)

Items per page: 201-1 of 1 items

1 of 1 pages

32°C
Partly sunny

Search



ENG
IN

17:29
03-08-2025

CONCLUSION


- The Eco Lifestyle Agent is a smart AI assistant built using IBM watsonx.ai to promote sustainable and eco-friendly 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

Future Scope

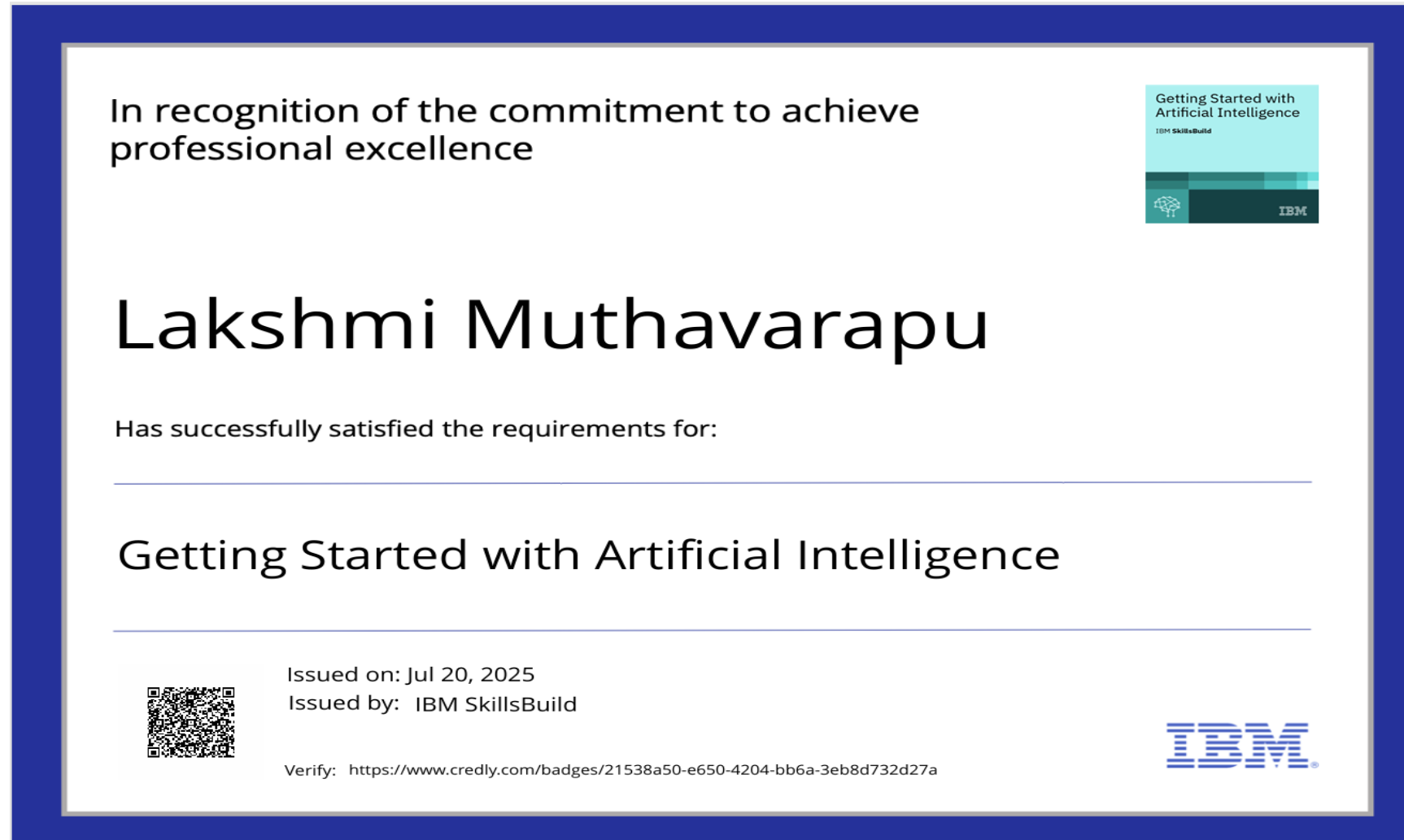
- Voice Assistant Integration for hands-free eco guidance.
- User Profile Tracking to offer more personalized suggestions.
- Mobile App Deployment for on-the-go access.
- Gamification Features like eco-points to encourage sustainable actions.
- Real-time Data Integration (e.g., live pollution, local events).
- Multilingual Support to reach a wider audience.
- Expanded Knowledge Base with updates from new environmental sources.

REFERENCES

-  References
- IBM watsonx.ai Documentation – <https://www.ibm.com/products/watsonx-ai>
- IBM watsonx Agent Builder – <https://dataplatfom.cloud.ibm.com>
- United Nations Environment Programme (UNEP) – <https://www.unep.org>
- Ministry of Environment, Forest and Climate Change (India) – <https://moef.gov.in>
- Central Pollution Control Board (India) – <https://cpcb.nic.in>
- RAG Paper by Facebook AI – "Retrieval-Augmented Generation for Knowledge-Intensive NLP Tasks", 2020.
- Eco-friendly product recommendations – <https://www.ecowatch.com>
- IBM Watsonx Runtime Documentation – <https://cloud.ibm.com/docs/watsonx-runtime>

IBM CERTIFICATIONS

- Screenshot/ credly certificate(getting started with AI)



IBM CERTIFICATIONS

- Screenshot/ credly certificate(Journey to Cloud)



IBM CERTIFICATIONS

- Screenshot/ credly certificate(RAG Lab)



- GitHub Link:<https://github.com/LakshmiMuthavarapu/IBM-CLOUD-PROJECT.git>



THANK YOU