

IBM HACKATHON PROJECT

ECO LIFESTYLE AGENT

Presented By

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OUTLINE

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PROBLEM STATEMENT

- In today's rapidly changing environmental landscape, individuals often face confusion and lack of direction when it comes to adopting eco-friendly habits. Limited awareness, scattered information, and inconsistent access to reliable guidance make it difficult for people to make sustainable lifestyle choices in their daily routines.
- Despite increasing concern for the environment, many users are unaware of practical steps they can take to reduce their carbon footprint, manage household waste, or choose greener alternatives. Meanwhile, environmental organizations and government bodies struggle to reach a broader audience due to limited engagement and awareness channels.
- There is a pressing need for a dedicated **Eco Lifestyle Agent** that bridges this gap by offering **personalized, accurate, and timely eco-guidance**. This AI-powered assistant helps users discover actionable sustainability tips, find local recycling solutions, learn about government schemes, and receive product recommendations to support their green journey—making sustainable living easy, informed, and accessible to everyone.

PROPOSED SOLUTION

The **Eco Lifestyle Agent** is a smart, AI-powered assistant that guides users toward sustainable living by offering personalized tips, local recycling info, eco-product suggestions, and government scheme awareness. Built using **RAG architecture** and **IBM Granite models**, it retrieves trusted environmental data to deliver real-time, actionable guidance.

Goals of the System:

-  Simplify eco-friendly living through user-friendly suggestions
-  Encourage daily green habits with personalized tips
-  Bridge the awareness gap using verified data sources
-  Use AI to deliver accurate, contextual responses
-  Offer location-specific recycling and sustainability support
-  Raise awareness about eco-initiatives and programs

TECHNOLOGY USED

- IBM cloud lite services
- Natural Language Processing (NLP)
- Retrieval Augmented Generation (RAG)
- IBM Granite model

IBM CLOUD SERVICES USED

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

ALGORITHM & DEPLOYMENT

The Eco Lifestyle Agent uses **RAG (Retrieval-Augmented Generation)** with **IBM Granite** to provide personalized, real-time eco-guidance.

Algorithm Used:

- The system uses **Retrieval-Augmented Generation (RAG)** with **IBM Granite** to provide real-time, personalized eco-guidance by retrieving relevant content and generating natural responses

Data Input:

- User queries in natural language
- Curated eco-content: tips, recycling info, government schemes

Process Flow:

- Embed user query
- Retrieve top-matching eco documents
- Generate context-aware response using IBM Granite
- Display suggestion with optional sources

Deployment Tools:

- IBM Watsonx AI Studio
- IBM Watsonx AI Runtime
- IBM Cloud Agent Lab IBM Granite Foundation Model

RESULT

The screenshot displays the IBM watsonx interface for building and previewing an AI agent named 'EcoLifeAgent'.

Build Section:

- Model:** granite-3-3-8b-instruct
- Buttons:** Add a tool, Create custom tool
- Added tools (5):**
 - Google search:** Retrieve information from the internet with the Google search engine.
 - DuckDuckGo search:** Retrieve information from the internet with the DuckDuckGo search engine.
 - Wikipedia search:** Retrieve information from Wikipedia articles.
 - Webcrawler:** Retrieve information from a website.
 - Weather:** Retrieve the weather of a city.

Agent preview Section:

- Welcome to EcoLifeAgent:** AI agent offering eco-friendly tips by retrieving trusted data to promote daily sustainable living.
- Sample questions:**
 - How can I reduce plastic use at home?
 - Where can I recycle e-waste near me?
 - What are eco-friendly travel options in my city?
 - What are some sustainable product alternatives?
- Input field:** Type something...

RESULT

Upgrade

?

🔔

Varshitha Velagala's Account ▾

Dallas ▾

VV

are feedback β 🟢 Autosaved 7:56 PM 📁 ▾ New agent + Deploy 🚀 🔒 📘

Agent preview

VV

You: 07:56 PM

How can I reduce plastic use at home?

🤖

EcoLifeAgent 07:56 PM

Hi, I am EcoGuide. Here are some practical ways to reduce plastic use at home:

- **Switch to Reusable Items:** Replace single-use plastics with reusable alternatives. For example, use cloth bags for shopping, a reusable water bottle, and glass or stainless steel containers instead of plastic wrap.
- **Buy in Bulk:** Purchasing items in bulk often means less packaging, which can significantly cut down on plastic waste.
- **Choose Products with Minimal Packaging:** When shopping, opt for products with little to no plastic packaging. For instance, buy loose fruits and vegetables instead of pre-packaged ones.
- **Use a Reusable Coffee Cup:** If you enjoy coffee on-the-go, bring your own reusable cup to cafes.
- **Say No to Plastic Cutlery and Straws:** Use reusable cutlery and avoid drinks with straws when possible.

Type something...

🗑️ ➤

RESULT

The screenshot displays the IBM watsonx user interface. At the top, the navigation bar includes the IBM watsonx logo, an 'Upgrade' button, and user account information for 'Varshitha Velagala'. The breadcrumb trail indicates the current location: 'Deployment spaces / EcoLifestyleAgent / EcoLifeAgent /'. The main header for the agent is 'EcoLifeAgent', which is marked as 'Deployed' and 'Online'. Below this, three tabs are visible: 'API reference', 'Test', and 'Preview', with the 'Preview' tab being the active one. The chat interface shows a user query at 08:01 PM: 'how can i reduce plastic'. The agent's response, also at 08:01 PM, is: 'Hi, I'm EcoGuide, your eco lifestyle assistant. Here are some ways you can reduce your plastic use:'. This is followed by a numbered list of four items: 1. Carry a Reusable Shopping Bag, 2. Use a Reusable Water Bottle, 3. Say No to Plastic Straws and Cutlery, and 4. Buy in Bulk. At the bottom, there is a text input field with the placeholder 'Type something...' and a send button.

IBM watsonx Upgrade ? ⓘ ⚙️ ⌚ 💬 👤 Varshitha Velagala's Account Dallas VV

Deployment spaces / EcoLifestyleAgent / EcoLifeAgent /

EcoLifeAgent ✓ Deployed Online

API reference Test **Preview**

New chat +

You 08:01 PM
how can i reduce plastic

EcoLifeAgent 08:01 PM
Hi, I'm EcoGuide, your eco lifestyle assistant. Here are some ways you can reduce your plastic use:

- 1. Carry a Reusable Shopping Bag:** Always keep a few reusable bags in your car or by the door to avoid using plastic bags at the grocery store.
- 2. Use a Reusable Water Bottle:** Invest in a good quality, reusable water bottle. This reduces the need for single-use plastic water bottles.
- 3. Say No to Plastic Straws and Cutlery:** If you don't need them, avoid using plastic straws, forks, and knives. If you do need them occasionally, carry your own reusable set.
- 4. Buy in Bulk:** Buying in bulk often means less packaging, including less plastic.

Type something...

RESULT

Deployed AI Agent

The screenshot displays the IBM Watsonx user interface. At the top, a dark navigation bar includes the 'IBM watsonx' logo, an 'Upgrade' button, and a user profile for 'Varshitha Velagala'. Below this, a breadcrumb trail shows the path: 'Deployment spaces / EcoLifestyleAgent / EcoLifeAgent'. The main content area features the 'EcoLifeAgent' name with a green checkmark indicating it is 'Deployed' and an 'Online' status badge. Three tabs are visible: 'API reference', 'Test', and 'Preview', with the 'Preview' tab currently selected. The preview window shows a chat interface where the agent, 'EcoLifeAgent', has sent a welcome message at 08:00 PM: 'Welcome to EcoLifeAgent. AI agent offering eco-friendly tips by retrieving trusted data to promote daily sustainable living.' Below the message is a diagram of a house with a green circle and a magnifying glass icon, symbolizing eco-friendly search or data retrieval. At the bottom of the preview, there is a section titled 'Quick start samples' with a text input field containing the placeholder 'Type something...' and a send button.

CONCLUSION

- The Eco Lifestyle Agent empowers users to make sustainable choices through personalized, AI-driven eco-guidance, simplifying access to trusted environmental information.
- It promotes daily green habits, increases environmental awareness, and bridges the gap between users and reliable sustainability resources using IBM's RAG and Granite technologies.
- The system makes sustainability more accessible, practical, and impactful for everyday life.

FUTURE SCOPE

- AI-Powered Environmental Q&A and Tips Expansion
- Voice and Multilingual Support
- Integration with Government & NGO Portals
- Mobile App with Offline Mode
- Blockchain for Green Certifications
- Community Engagement Ecosystem

IBM CERTIFICATIONS



In recognition of the commitment to achieve
professional excellence



varshitha velagala

Has successfully satisfied the requirements for:

Journey to Cloud: Envisioning Your Solution



Issued on: Jul 18, 2025

Issued by: IBM SkillsBuild

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IBM **SkillsBuild**

Completion Certificate



This certificate is presented to

Varshitha velagala

for the completion of

**Lab: Retrieval Augmented Generation with
LangChain**

(ALM-COURSE_3824998)

According to the Adobe Learning Manager system of record

Completion date: 24 Jul 2025 (GMT)

Learning hours: 20 mins

THANK YOU