

Kasparro Applied AI – Agentic Content Generation System

Internship Assignment Submission – Applied AI Engineer

1. Problem Statement

D2C brands rely on high-quality product content such as FAQs, product descriptions, and comparison pages.

Manually creating this content is:

- Time-consuming
- Repetitive
- Inconsistent
- Hard to scale

Objective:

Build an **Agentic AI-powered content generation system** that automatically produces:

1. FAQ Pages
2. Product Description Pages
3. Comparison Pages

The system must be modular, scalable, and capable of serving real marketing content for D2C brands.

2. Solution Overview

I designed a **three-agent pipeline**, each agent responsible for one content type.

Every agent generates structured JSON output which the Streamlit dashboard visualizes.

Agent Breakdown

- **Agent 1 – FAQ Generator**
Creates categorized FAQs with accurate, customer-friendly answers.
- **Agent 2 – Product Description Generator**
Creates ingredients, benefits, usage instructions, safety text, pricing, and summary.
- **Agent 3 – Comparison Engine**
Compares two products, identifies shared/exclusive ingredients, generates a feature table, and produces a price verdict.

Outputs are saved as:

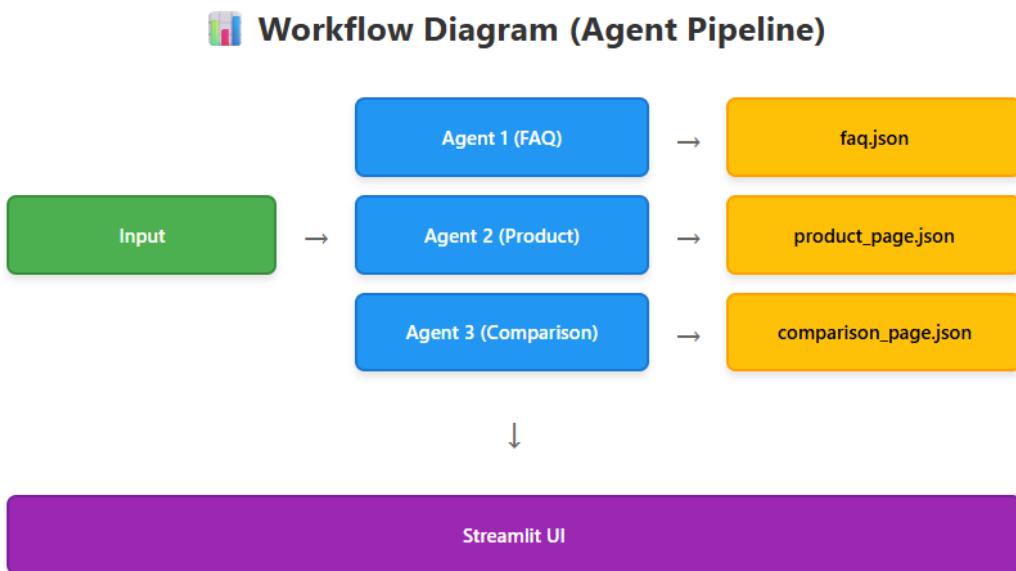
- faq.json
- product_page.json
- comparison_page.json

These files are then rendered cleanly in the Streamlit app.

3. System Architecture Diagram



4. Workflow



5. Key Features of My System

✓ Modular Agent Architecture

Each agent works independently → easy debugging & scalability.

✓ Clean JSON Output

Ensures consistency and predictable rendering.

✓ Premium UI (Dark Mode + Custom CSS)

Matches D2C product design aesthetics.

✓ Comparison Intelligence

- Shared vs exclusive ingredients
- Feature comparison table
- Price affordability verdict

✓ NGROK Deployment for Colab

Enables real-time testing and demo access.

6. Streamlit Dashboard Overview

The UI contains **3 main tabs**:

FAQ Page

- Displays the product name
- Each FAQ in collapsible expanders
- Category + Answer

Product Page

Includes:

- Banner section with product name
- Ingredients
- Benefits
- Safety
- Summary
- Price
- Usage Instructions

Comparison Dashboard

Includes:

- Gradient cards for Product A & B
- Feature comparison table
- Ingredient overlap cards
- Price verdict ("Which product is more affordable")

7. Folder Structure

```
project/
  |
  └── agents/                                # Multi-agent logic for FAQ, Product,
    Comparison
  |
  └── data/                                   # Input product data and prompt
    assets
  |
  └── logic_blocks/                          # Modular logic units (prompting,
    validation, parsing)
  |
  └── output/                                # Generated JSON files
    ├── faq.json
    ├── product_page.json
    └── comparison_page.json
  |
  └── templates/                            # Reusable templates for structured
    generation
  |
  └── app.py                                 # Streamlit UI for interactive
    visualization
  |
  └── main.py                               # Main pipeline orchestrator
```

8. How to Run the System (Colab)

Install Dependencies

```
pip install streamlit pyngrok
```

Start NGROK Tunnel

```
from pyngrok import ngrok
ngrok.set_auth_token("YOUR_TOKEN")
public_url = ngrok.connect(8501)
print(public_url)
```

Run Streamlit

```
streamlit run app.py --server.port 8501 --server.address 0.0.0.0
```

9. Innovations Introduced

1. Fully Separate Agents

Better maintainability and upgrade capability.

2. Dynamic JSON Rendering

Any change in schema automatically reflects in UI.

3. Aesthetic D2C-Grade UI Design

- Gradient cards
- Dark theme
- Section banners
- Responsive layout

4. Ingredient Intelligence

Extracts:

- Shared ingredients
- Only in Product A
- Only in Product B

5. Price Verdict Engine

Automatically determines which product is more affordable.

10. Screenshots

Upload and paste:

1. FAQ Page

The screenshot shows a dark-themed web page titled "FAQ Page". At the top, there is a header with the text "Kasparro Applied AI - Agentic Content System" and "Built by Hrishikeshan N.P.". Below the header, there are three navigation links: "FAQ Page", "Product Page", and "Comparison Page". The main content area is titled "Frequently Asked Questions" and features a section for the product "GlowBoost Vitamin C Serum". The first question is "What is GlowBoost Vitamin C Serum and what does it do?", categorized under "Informational". The answer is "Vitamin C brightens skin and fades pigmentation.". The second question is "What is the concentration in GlowBoost Vitamin C Serum?", also categorized under "Informational". The answer is "Vitamin C brightens skin and fades pigmentation.". The third question is "How do I use GlowBoost Vitamin C Serum?", categorized under "Usage". The answer is "Apply 2-3 drops in the morning before sunscreen".

2. Product Page

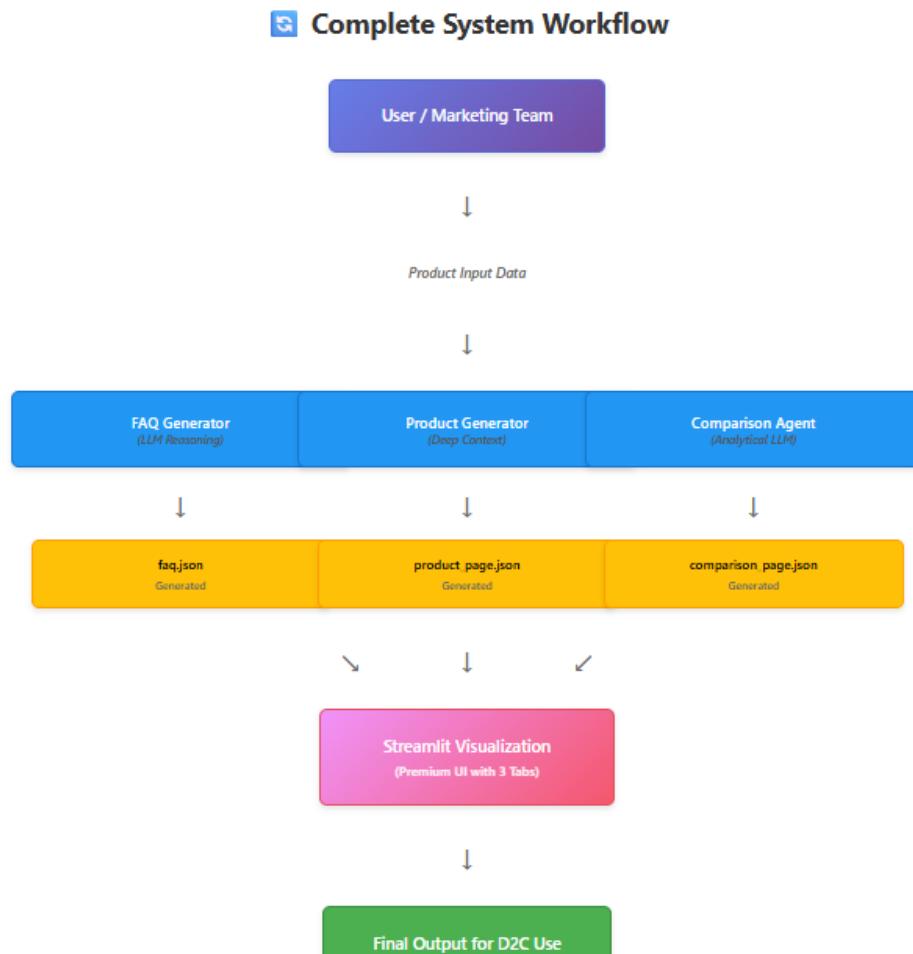
The screenshot shows a dark-themed web page titled "GlowBoost Vitamin C Serum". At the top, there is a header with the text "File change", "Run", and "Always run". Below the header, there are three navigation links: "FAQ Page", "Product Page" (which is highlighted in red), and "Comparison Page". The main content area has a pink header with the product name "GlowBoost Vitamin C Serum" and a sub-header "Premium AI-Generated Product Page". The page is divided into several sections: "Key Ingredients" (listing Vitamin C and Hyaluronic Acid), "Safety" (noting mild tingling for sensitive skin), "Benefits" (listing brightening and fading dark spots), "Usage Instructions" (instructions to apply 2-3 drops in the morning before sunscreen), "Price" (₹699), and "Summary" (describing the product as a 10% Vitamin C serum with Vitamin C and Hyaluronic Acid).

3. Comparison Dashboard

The screenshot displays a dark-themed comparison dashboard for two Vitamin C serums. At the top, there's a header bar with a back arrow, the system name 'Kasperro Applied AI - Agentic Content System', and a note 'Built by Hrishikeshan N.P.'. Below the header are navigation links for 'FAQ Page', 'Product Page', and 'Comparison Page'. The main title 'Premium Comparison Dashboard' is centered above two product cards. The first card, 'GlowBoost Vitamin C Serum', has a red background, a purple icon, and the text 'GlowBoost Vitamin C Serum'. Below it is the price 'Price: ₹699'. The second card, 'LumaRadiance Vitamin C Serum', has a blue background, a blue icon, and the text 'LumaRadiance Vitamin C Serum'. Below it is the price 'Price: ₹799'. Below these cards is a section titled 'Feature Comparison Table' with a small icon. A table compares various features between the two serums:

Feature	GlowBoost Vitamin C Serum	LumaRadiance Vitamin C Serum
Concentration	10% Vitamin C	12% Vitamin C
Skin Type	Oily, Combination	Dry, Combination
Benefits	Brightening, Fades dark spots	Brightening, Hydration
How to Use	Apply 2-3 drops in the morning before sunscreen	Apply 2 drops morning and night
Side Effects	Mild irritation, Sensitivity, etc.	Moderate dryness, Irritation, etc.

10. Complete System WorkFlow:



11. Final Conclusion

This project demonstrates:

- Agentic LLM design
- Scalable JSON-first architecture
- Clean UI/UX
- Intelligent comparison logic
- Deployment capability (NGROK + Streamlit)

The result is a **production-ready content generation framework** suitable for D2C brands, SEO teams, and marketing automation.