

# INTELLIGENT SHOPPING AGENT

TEAM NO.: 82

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## Project Details:

An intelligent shopping agent that helps in decision making of user and make the purchasing easier to use helping both retailer and consumer to verify the seller site and can be scaled well.

## Problem Statement:

In the modern e-commerce landscape, consumers are often overwhelmed by the vast number of choices, scattered product information, and fluctuating prices across different platforms. Manual comparison is time-consuming and often leads to "choice paralysis" or missed deals. There is a critical need for an automated, intelligent system that consolidates this data to help users make informed, cost-effective decisions efficiently.

## Need of Project:

**Information Overload:** With millions of products available, users struggle to find the best value manually.

**24/7 Availability:** Unlike human shopping assistants, an AI agent provides immediate support at any time.

**Price Transparency:** The agent can scrape and compare prices in real-time, ensuring the user finds the lowest cost.

**Personalization:** Traditional search engines are generic; an intelligent agent learns user preferences to offer tailored suggestions.

## Proposed Solution:

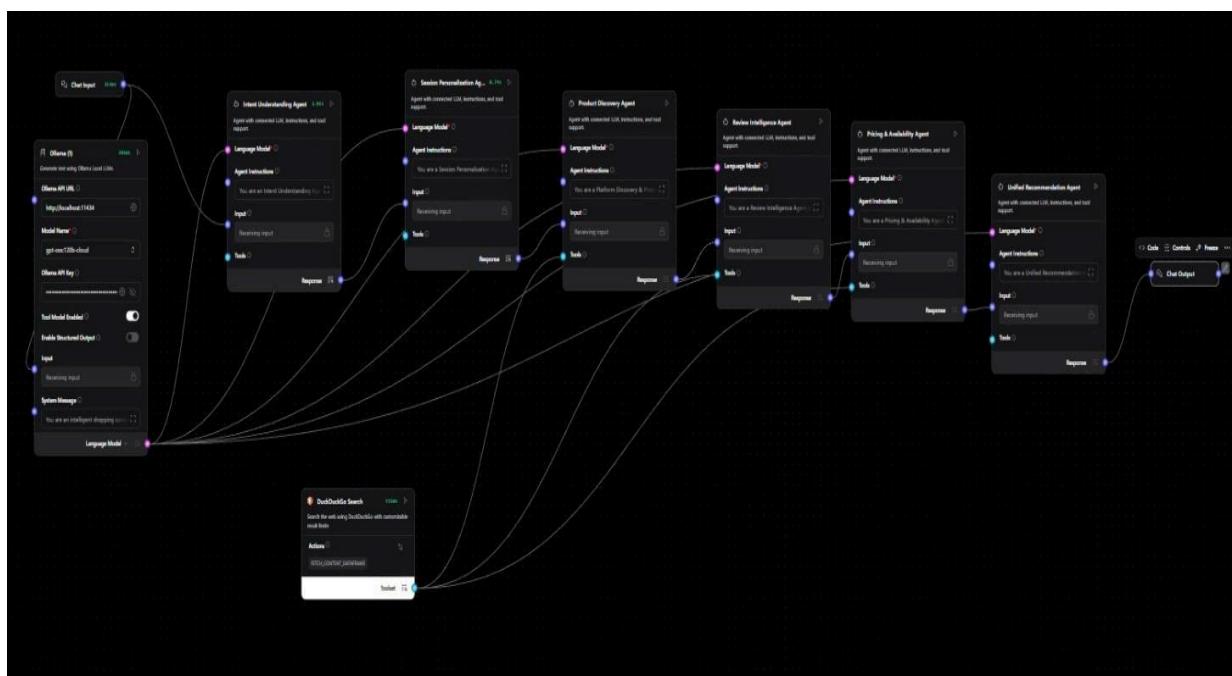
The proposed model utilizes a Multi-Agent Architecture or a Generative AI framework to process user intent. The system leverages Natural Language Processing (NLP) to understand queries and Web Scraping or APIs to fetch real-time data from various e-commerce sites. It then employs a recommendation engine to rank products based on user budget and preferences.

## Technology Used:

- **Core LLM:** Google OLLAMA ( gpt-oss-120b model) serves as the primary intelligence engine for all agents.
- **Orchestration:** A node-based flow system (LangFlow) to manage agent communication.
- **Search Engine Integration:** DuckDuckGo Search tool for fetching live web data without tracking
- **Interface:** Chat-based input/output for natural language interaction

## Project Outcomes:

1. **Granular Accuracy:** By using an **Intent Parser**, the system avoids generic search results and focuses on user-specific needs.
2. **Real-time Data Fetching:** Integration with DuckDuckGo ensures that product availability and pricing are current.
3. **Structured Information:** The use of specialized extraction agents converts messy web data into clean, readable shopping advice.





## **Modelling:**

### Phase I: Understanding

Before looking for products, the system takes a moment to truly understand you.

- The Intent Expert: It doesn't just read keywords; it deciphers what you actually need. Whether you type "running shoes" or "sneakers for a marathon under RS 1000," this agent identifies your core goal, mandatory requirements, and budget limits.
- The Memory Keeper: You shouldn't have to repeat yourself. This agent remembers the context of your current conversation, ensuring that if you say "make it blue" five minutes later, it knows exactly which product you are referring to.

### Phase II : Research

Once we know what you want, our agents scour the web in real-time—so you don't have to open 20 different tabs.

- The Scout: This agent acts as a strategist, determining the best digital aisles to walk down. It identifies which retailers and categories match your specific needs.
- The Real-Time Researcher: Powered by DuckDuckGo, this agent goes beyond static databases. It browses the live web to fetch up-to-the-minute data, ensuring you aren't looking at outdated prices or old models.

### Phase III: Filtering

Finding products is easy; finding *good* products is hard. This phase is about quality control.

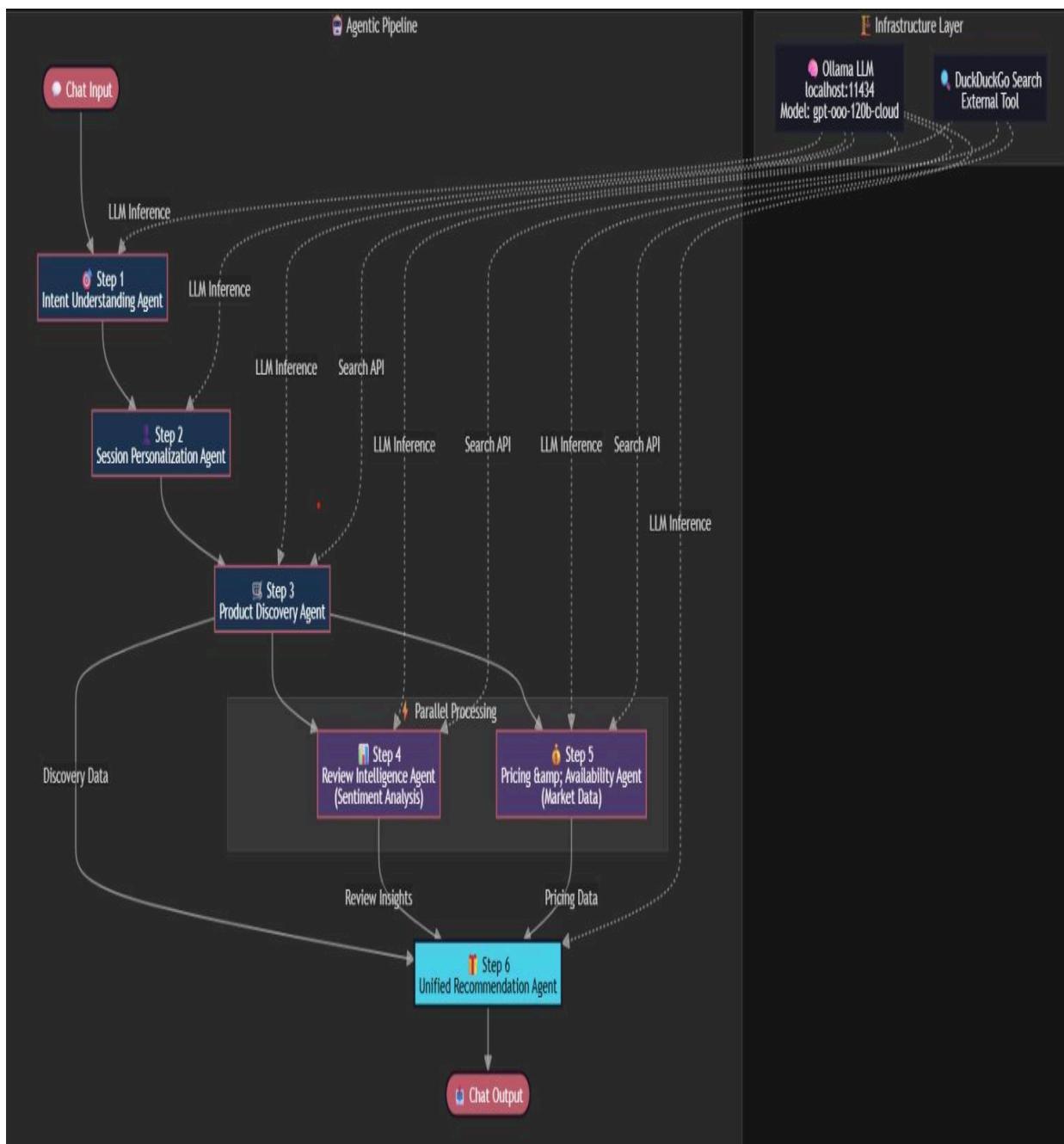
- The Sentinel (Review Intelligence): This agent reads the fine print and the comments section for you. It analyses sentiment to ensure high ratings are genuine and alerts you to potential quality issues.
- The Deal Hunter: This agent verifies two critical things: Is the price fair (looking at cost-to-value ratios), and is the item actually in stock right now?
- The Organizer: After gathering messy data from across the web, this agent cleans and standardizes everything, turning chaos into a clear, comparable list.

### Phase IV: delivery layer

Finally, we present the solution on a silver platter.

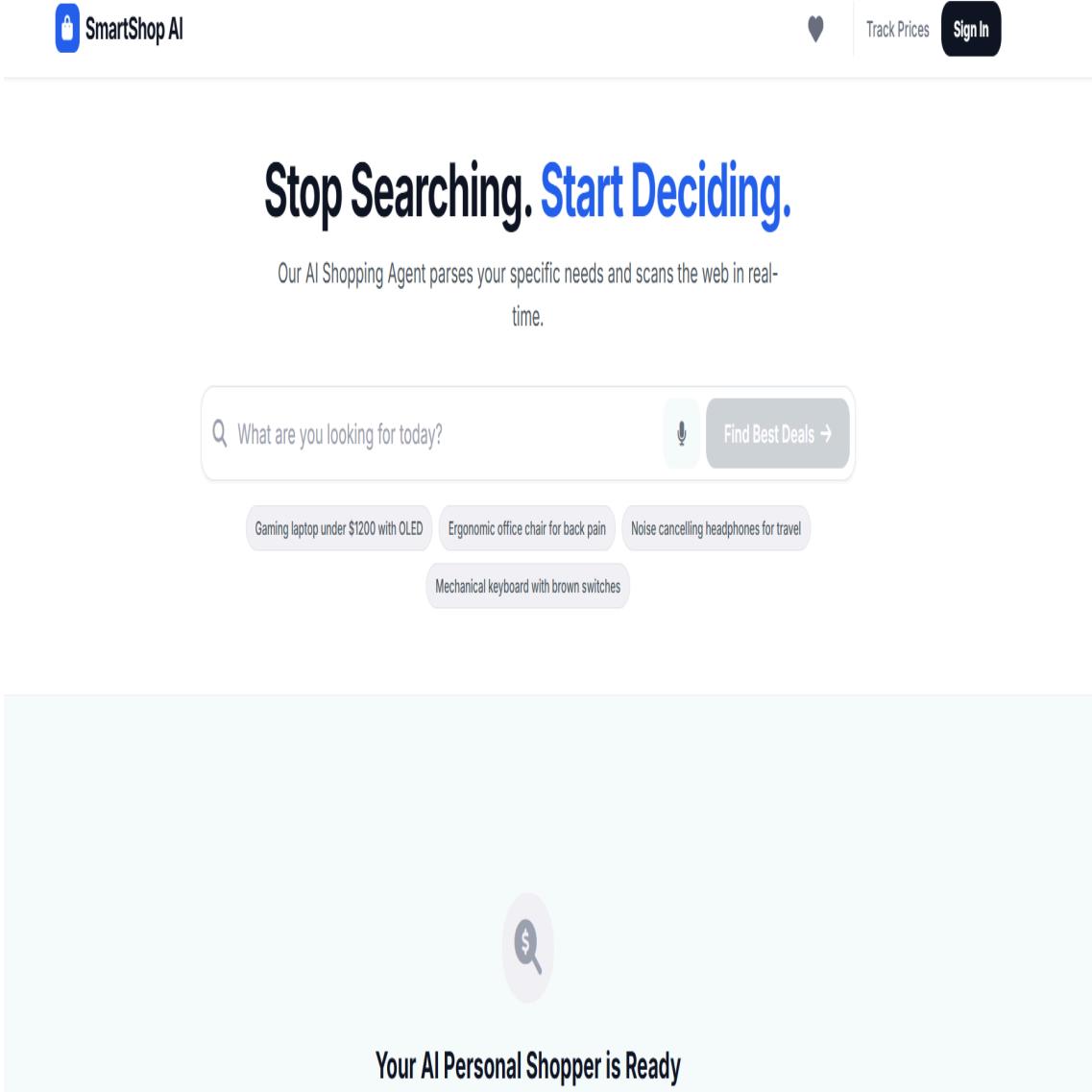
- The Advisor: This agent brings everything together. Instead of a raw list of links, you receive a conversational summary. It explains *why* these specific products were chosen, offers side-by-side comparisons, and provides direct links to buy—saving you time and decision fatigue.

## Data flow diagram :



## **Results:**

1. Graphical User Interface (GUI):



The screenshot shows the SmartShop AI web interface. At the top left is the logo 'SmartShop AI' with a blue shopping bag icon. To its right are three buttons: a heart icon, 'Track Prices', and a black 'Sign In' button. Below the header is a large, bold, dark blue text 'Stop Searching. Start Deciding.' followed by a smaller, lighter blue text: 'Our AI Shopping Agent parses your specific needs and scans the web in real-time.' Below this is a search bar with a magnifying glass icon and the placeholder text 'What are you looking for today?'. To the right of the search bar is a microphone icon and a grey button labeled 'Find Best Deals →'. Underneath the search bar are four small, rounded rectangular buttons with text: 'Gaming laptop under \$1200 with OLED', 'Ergonomic office chair for back pain', 'Noise cancelling headphones for travel', and 'Mechanical keyboard with brown switches'. A large, light-grey rectangular area occupies the center of the page. In the middle of this area is a circular icon containing a magnifying glass with a dollar sign inside it. At the bottom of the central area is the text 'Your AI Personal Shopper is Ready'.

## 2. Real-Time Prediction Output:

 SmartShop AI

 Priya

Search

 AI Insight

I've scanned top retailers. For coding under ₹60k, I prioritized powerful processors (i5/Ryzen 5) and 16GB RAM for smooth multitasking.

**Top Pick:** ASUS Vivobook 16 offers the best performance per rupee with its H-series processor.

**Best Battery:** Acer Aspire 5 is great for long coding sessions unplugged.

|   | Product  | Product                 | Description  |
|---|--|-------------------------|--|
| 1 |  ASUS Vivobook 16 (X1605) | ₹56,990<br>▼ 8% drop    |  <b>Best Performance</b><br>Powerful Intel Core i5-13500H, 16GB RAM, 512GB SSD. Large 16" screen is excellent for coding. <a href="#">[ View Deal ↗ ]</a> |
| 2 |  Acer Aspire 5          | ₹54,999<br>Stable Price |  <b>Best Battery Life</b><br>AMD Ryzen 5 7530U, 16GB RAM. Up to 10 hours battery life, perfect for students and travel. <a href="#">[ View Deal ↗ ]</a> |
| 3 |  HP Laptop 15s          | ₹52,490<br>▼ ₹2,500 off |  <b>Reliable Choice</b><br>Intel Core i5-1235U, 16GB RAM. Known for good build quality and comfortable keyboard. <a href="#">[ View Deal ↗ ]</a>        |
| 4 |  Lenovo IdeaPad Slim 3  | ₹49,990<br>Best Value   |  <b>Budget Friendly</b><br>AMD Ryzen 5 7520U, 8GB RAM. Good entry-level option if you are on a strict budget. <a href="#">[ View Deal ↗ ]</a>           |

Did I miss anything? Tell me if you prefer a specific brand like Samsung or RealMe.



## **Future scope for project enhancement:**

- **Dynamic Price Prediction: Using Machine Learning to predict when a price might drop.**
- **Voice Integration:** Enabling users to shop entirely via voice commands.
- **Virtual Try-On:** Integrating Augmented Reality (AR) to let users see products before buying.