Proposal for Natural Language Processing: Intelligent Shopping Assistant

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1 Problem Background and Introduction

The goal of this project is to build an intelligent shopping assistant that leverages existing Language Models (LLMs) to enhance the user experience and improve efficiency on online shopping platforms. The proposed product will provide a novel solution for both customers and sellers, addressing their pain points and offering a seamless shopping experience. On shopping platforms like Taobao or Amazon, customers often face challenges in finding the right set of items for their specific needs. They may struggle to articulate their requirements accurately, leading to suboptimal search results. Additionally, sellers may encounter difficulties in understanding and responding to customers' input, especially when it involves non-textual information like images or videos. The proposed solution aims to address these issues.

2 Proposed Solution

2.1 Intelligent Shopping List Generation

To assist customers in finding the right set of items, we will leverage LLMs to build an intelligent shopping list generation system. The system will allow users to input their requirements using natural language queries. For example, a user interested in climbing mountains can simply type "climb mountains" as their query. The system will process this query and generate a curated list of items needed for mountain climbing, such as hiking boots, ropes, carabiners, and camping equipment. The system will present the results to the user in a user-friendly interface, allowing them to review and modify the list as needed. To further enhance the user experience, the system will automate webpage controls to add the selected items to the shopping cart, streamlining the purchasing process.

2.2 Intelligent Communication Platform

To address the need for real-time feedback and effective communication between sellers and customers, we propose an intelligent communication platform. This platform will enable customers to provide input in various formats, such as pictures, videos, or sounds, and convert them into structured data for seamless communication. Utilizing LLMs and visual recognition models, the platform will analyze the customer's input and extract relevant information. For instance, if a customer uploads an image of a damaged product, the platform will automatically detect the issue and classify it. This structured data will be shared with the seller, enabling them to understand the problem quickly and provide appropriate solutions. The platform will also facilitate real-time communication between customers and sellers, ensuring prompt and efficient support.

3 Additional Functions and Ideas

In addition to the core functionalities outlined in the proposal, here are some additional functions and ideas that can be incorporated into the intelligent shopping assistant:

- Price Comparison and Deal Finder: The system can leverage web scraping techniques to gather pricing information from various shopping platforms. Users will be able to compare prices for the same or similar products across different platforms, helping them make informed purchasing decisions. Additionally, the system can identify and highlight ongoing deals or discounts, ensuring users never miss out on potential savings.
- Natural Language Product Queries: Expanding on the natural language capabilities, the system can handle more complex queries beyond simple keywords. Users can ask questions like "What are the best-rated smartphones under $500?" or "Find me a laptop with at least 16GB RAM and a dedicated graphics card." The system will process these queries, understand the user's requirements, and generate accurate search results accordingly.
- Voice-based Shopping: To enhance convenience and accessibility, the system can incorporate voice-based interactions. Users can utilize voice commands to search for products, add items to their cart, or even complete purchases. This feature will cater to users who prefer hands-free or on-the-go shopping experiences.
- Intelligent Customer Support: The system can leverage LLMs to provide intelligent customer support. It can assist customers in resolving common issues, answering frequently asked questions, or guiding them through the return or exchange process. This feature will reduce the dependency on human support agents and provide customers with instant assistance.