# Talk-to-Gift: A RAG-Based Conversational Recommender for KakaoTalk Gift

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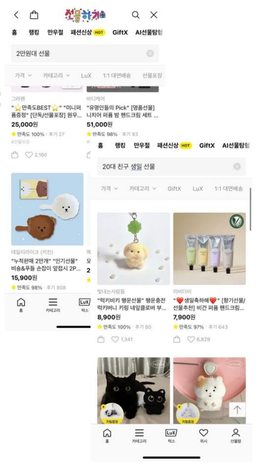
## 1. Motivation

KakaoTalk Gift's keyword-based search mainly matches product titles and broad categories, making it **hard to reflect nuanced constraints** and often **returning generic or unsuitable items.**
A pure LLM-only approach could generate **fluent but hallucinated** recommendations that are not actually in the catalog.
This motivates a **RAG-based conversational system** that uses the LLM to turn intent-level queries into structured filters, and retrieves real items and reviews from the product corpus, providing context-aware, data-grounded gift recommendations.

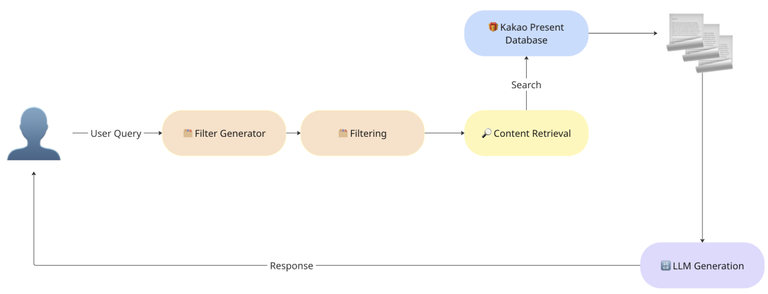


## 2. Method

### Data Collection

- Crawled KakaoTalk Gift using **Selenium and BeautifulSoup** to collect product metadata and user reviews
- In total, 43,077 products across **6 major categories (Gift Vouchers, Food, Leisure/Sports, Fashion, Beauty, Living/Books) and 66 sub-categories,** along with 540,814 reviews were obtained
- Due to modeling constraints, we filtered items by price range per category and number of reviews, resulting in **20,991 products and 463,843 reviews**
- Also conducted **EDA** before building the recommendation model

### Modeling




**1. Filtering**
- Extract structured filters (price, category, context tags) from user queries using an LLM (Gemini-2.5 Flash)
- Ex. 2만원대 -> 20000 <= price < 30000
- Apply price and category filters to constrain the search space

**2. Retrieval**
- Embed item descriptions and reviews with KR-SBERT and store them in ChromaDB
- Retrieve candidates via semantic search guided by context tags

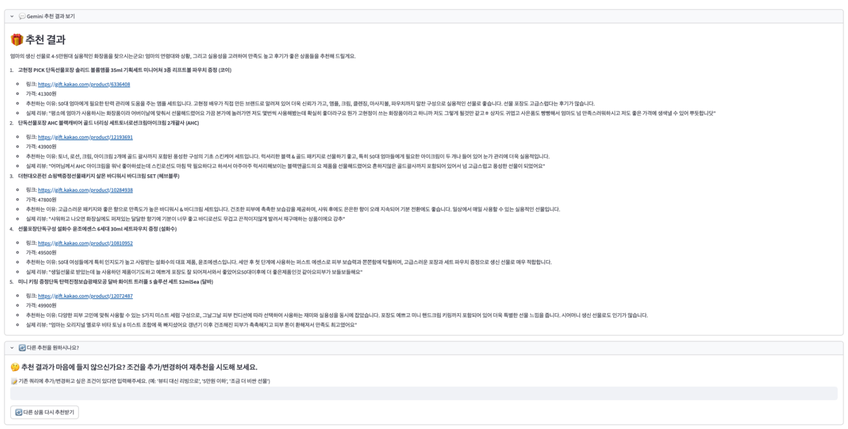
**3. Generation**
- LLM produces a final list of ~5 gifts, including links, prices, and concise recommendation reasons with real user reviews≈

### Interface

**1. User Input**

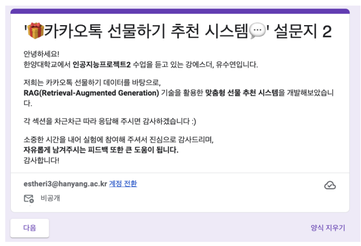

**2. Filtering & Retrieval**


**3. Generation & Re-recommendation**




## 3. Experiments

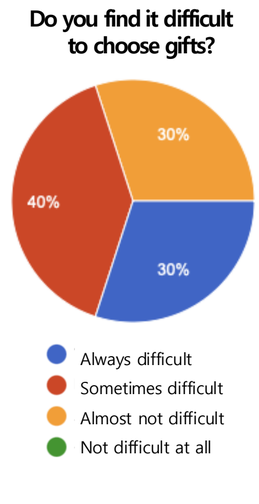
- Conducted **2 rounds of user studies**
  **1st Round (10 participants)**
  - Evaluated overall satisfaction, trust, item diversity, item serendipity, and willingness to use again
  - Led to improvements such as adding a "recommend again. feature, separating input fields, prompt engineering
- **2nd Round (20 participants)**
  - Re-evaluated the improved system using same criteria



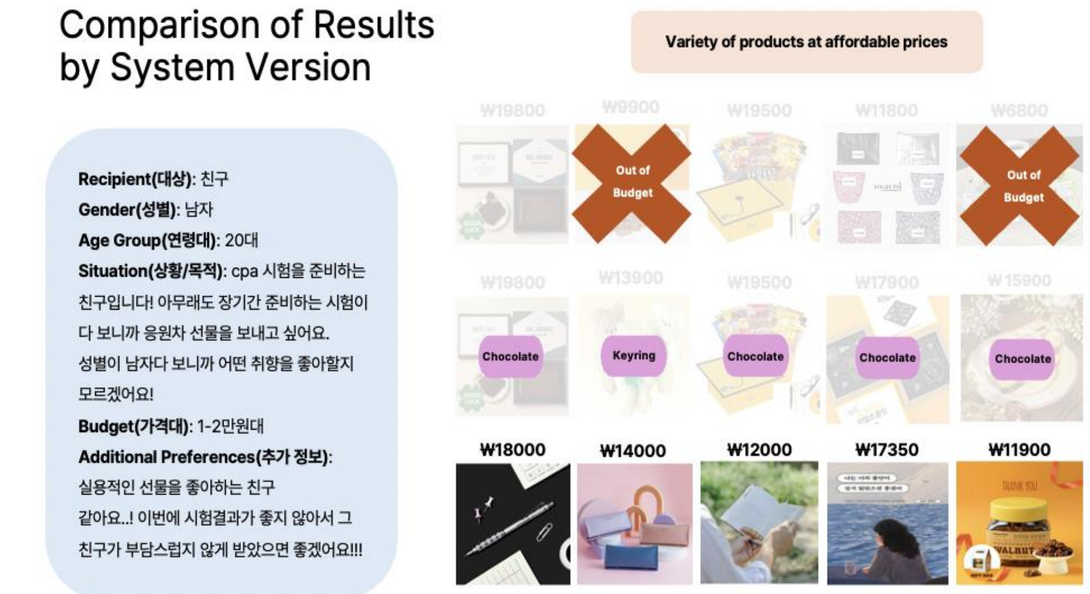

## 4. Results

### Quantitative Analysis

- **Satisfaction(만족도):** 4.3/5 (86%, ▲16%)
- **Relevance to User Query(쿼리 적합성):** 4/5 (75%)
- **Trust(신뢰도):** 4/5 (80%, ▲20%)
- **Product Diversity(상품 다양성):** 3.8/5 (70%)
- **Product Serendipity:** 75%
- **Willingness to use again(재사용 의향):** 3.9/5 (70%)




### Qualitative Analysis




- **First Row**: Version 1 (Without filtering)
- **Second Row**: Version 2 (With filtering, No separated input fields)
- **Last Row**: Final (With filtering, Feedback-based improvements)

## 5. Conclusion

Choosing a gift for someone can be a joyful way to think about that person, but in practice it is often difficult, time-consuming, and even a little stressful.

Our RAG-based conversational recommendation system aims to ease this burden by interpreting users' true intent and suggesting gifts that better match their situation and preferences than the current keyword-based search in KakaoTalk Gift.

While the system still has limitations—such as a static crawled database, a small-scale user study, and the inherent constraints of using LLMs—we believe that incorporating features like richer product displays, preference controls, "exclude" filters, and feedback/history management will further improve personalization, trust, and overall user experience.

We hope our system can help people focus more on the thought behind the gift rather than the effort of finding it!