1. Store the hierarchical labels into a VectorDB and GraphDB.

labels → Store → VectorDB C^1 C^2 C^L

labels → Transform to KG and store → GraphDB

2. Retrieve labels with similar semantics and construct a subgraph of the KG.

Input text: Finish Powerball Tablets, Orange Scent ...... → Retrieve from VectorDB → Q^1 Q^2 Q^L → Retrieve links from GraphDB → Subgraph

3. Transform from subgraph to prompt.

Subgraph → Upwards propagation → hierarchical label paths →

health personal care -> household supplies -> dishwashing
health personal care -> household supplies -> household cleaning
health personal care -> household supplies -> cleaning tools
......

Prompt of Subgraph

4. Classification of the ℓ-th level.

$Q^l + \downarrow y^{l-1}$ →

Classify the review of a product into one of the following categories: {category_text}. You must directly output one of the categories and do not add ", ', and *.

Prompt of Subgraph →

Here is the partial knowledge graph:
"""
{knowledge}
"""

Input text →

Review of a product
"""
{review}
"""

Prompt template

→ Construct → Prompt → Input → LLM → Generate → Prediction y^l