Trent Limited FAQ Chatbot – Report

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Introduction

Trent Limited operates brands such as Westside, Zudio, Samoh, and Star. Stakeholders frequently seek concise, accurate answers about the company and its brands. This project delivers a Streamlit chatbot that uses only FAQs_questions.pdf as its knowledge base, ensuring responses remain within the document's scope.

Objectives

- Build a chatbot that replicates the existing app's flow and API usage but restricts context to FAQs_questions.pdf only.
- Provide transparent citations of the PDF snippets used for each answer.
- Maintain a simple, dependable retrieval pipeline for fast responses and easy deployment.

Dataset/Source Description

- Source: FAQs_questions.pdf (bundled with the app)
- Structure: Free-form text extracted per page using PyPDF2.PdfReader.
- Preprocessing: Minimal text cleaning; pages are treated as atomic context units.

Methodology

Retrieval-augmented generation (RAG) with:

- Vectorization: CountVectorizer(max_features=5000, stop_words='english')
- Weighting: TfidfTransformer(norm='l2', use_idf=True)
- Similarity: cosine_similarity between query vector and page TF–IDF vectors
- Generation: OpenRouter Chat Completions (openai/gpt-3.5-turbo by default)

Rationale: TF–IDF is light-weight, explainable, and effective for short FAQs; it avoids external indexes and reduces operational complexity for coursework and small deployments.

System Design & Architecture

- Ingestion: PyPDF2 extracts text per page from FAQs_questions.pdf.
- Indexing: Pages are vectorized and transformed into a TF–IDF matrix (cached via st.cache_resource).
- Retrieval: Top-k pages selected by cosine similarity to the user query.
- Prompting: Retrieved snippets are concatenated into the user prompt; the system prompt instructs grounding in the PDF.

- Generation: The LLM produces an answer with the provided context.
- Transparency: The UI displays the snippets (page numbers and similarity scores) used.

Component summary:

- load_faq_artifacts(pdf_path): PDF ingestion and TF–IDF matrix build
- retrieve_context(query, vectorizer, tfidf_matrix, pages, k): top-k retrieval
- build_prompt(question, snippets): system and user prompts
- call_openrouter(api_key, model, system_prompt, user_prompt): API call

Implementation Details

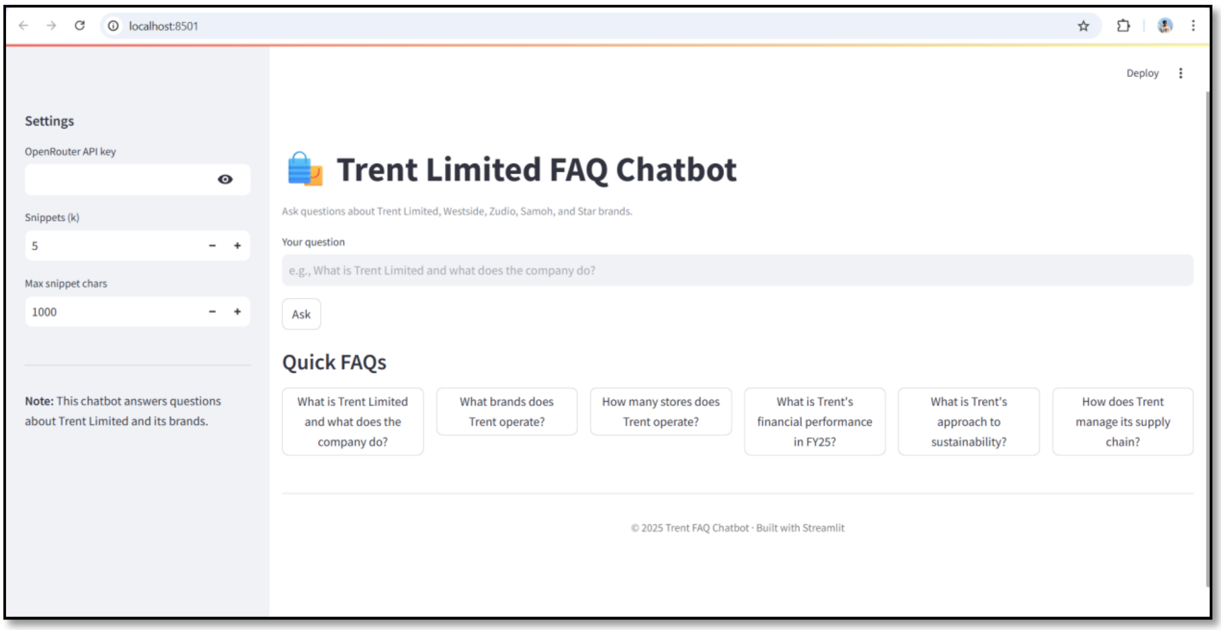
- Language & Frameworks: Python, Streamlit
- Dependencies: streamlit, scikit-learn, numpy, requests, PyPDF2
- Model API: OpenRouter (https://openrouter.ai/api/v1/chat/completions)
- Model: openai/gpt-3.5-turbo (configurable)
- Key Management: sidebar input, environment variable OPENROUTER_API_KEY, or Streamlit secrets
- Performance: k and snippet length tunable in sidebar; TF–IDF artifacts cached

Key constraints enforced in code:

- Only FAQs_questions.pdf is read for knowledge.
- If the answer is not in the PDF, the bot states this explicitly and suggests relevant sections.

Results & Observations

- The TF–IDF retriever reliably surfaced on-topic pages for most FAQ-style questions.
- Concise, specific queries improved retrieval precision compared to very broad prompts.
- The transparency panel (snippets + scores) helped verify that answers were grounded in the PDF.


localhost:8501
Deploy
Ask

Settings

OpenRouter API key:

Snippets (k): 5

Max snippet chars: 1000

Note: This chatbot answers questions about Trent Limited and its brands.

Trent Limited FAQ Chatbot

Ask questions about Trent Limited, Westside, Zudio, Samoh, and Star brands.

Your question: e.g., What is Trent Limited and what does the company do?

Quick FAQs

What is Trent Limited and what does the company do?
What brands does Trent operate?
How many stores does Trent operate?
What is Trent's financial performance in FY25?
What is Trent's approach to sustainability?
How does Trent manage its supply chain?

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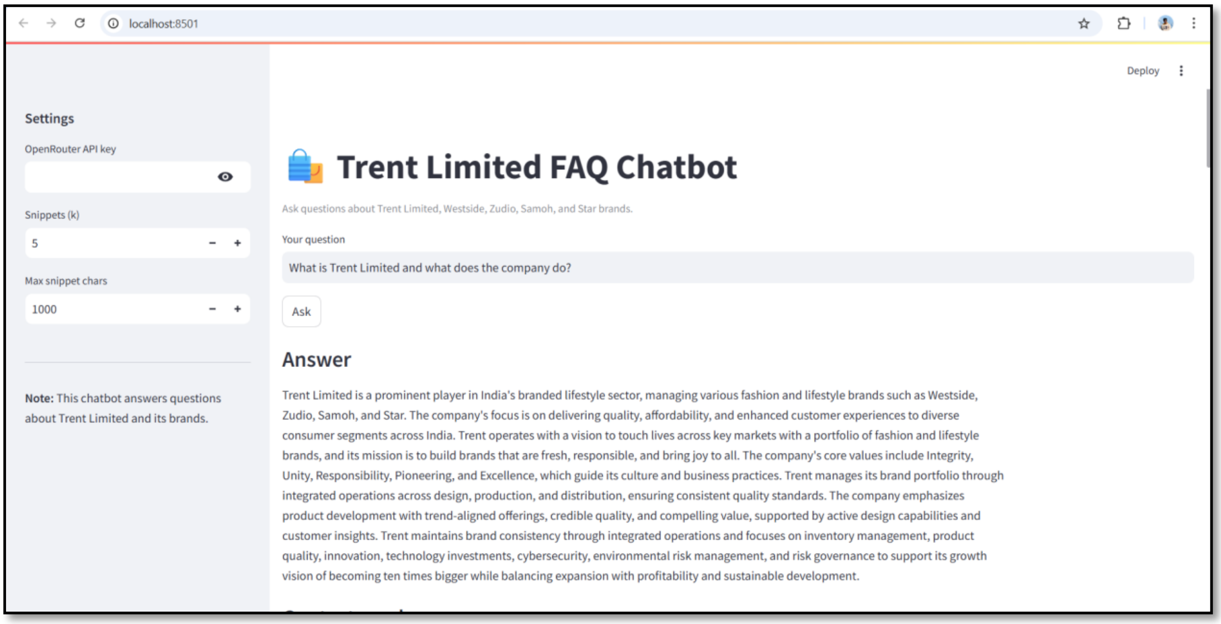


Settings

OpenRouter API key:

Snippets (k): 5

Max snippet chars: 1000

Note: This chatbot answers questions about Trent Limited and its brands.

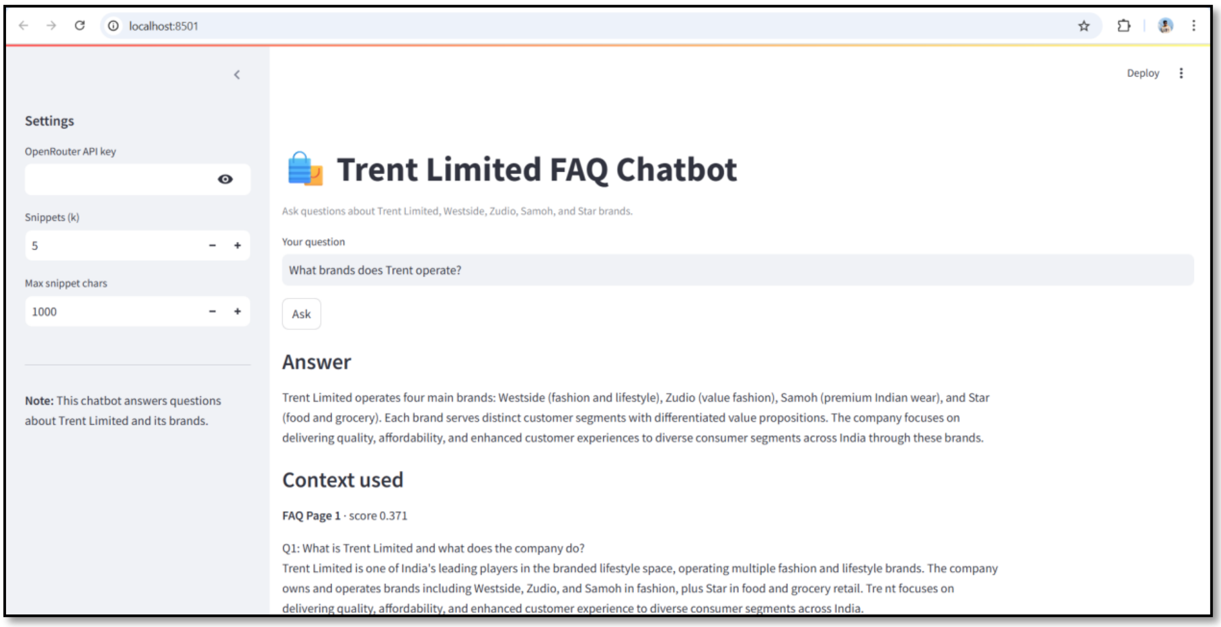
Trent Limited FAQ Chatbot

Ask questions about Trent Limited, Westside, Zudio, Samoh, and Star brands.

Your question: What is Trent Limited and what does the company do?

Answer

Trent Limited is a prominent player in India's branded lifestyle sector, managing various fashion and lifestyle brands such as Westside, Zudio, Samoh, and Star. The company's focus is on delivering quality, affordability, and enhanced customer experiences to diverse consumer segments across India. Trent operates with a vision to touch lives across key markets with a portfolio of fashion and lifestyle brands, and its mission is to build brands that are fresh, responsible, and bring joy to all. The company's core values include Integrity, Unity, Responsibility, Pioneering, and Excellence, which guide its culture and business practices. Trent manages its brand portfolio through integrated operations across design, production, and distribution, ensuring consistent quality standards. The company emphasizes product development with trend-aligned offerings, credible quality, and compelling value, supported by active design capabilities and customer insights. Trent maintains brand consistency through integrated operations and focuses on inventory management, product quality, innovation, technology investments, cybersecurity, environmental risk management, and risk governance to support its growth vision of becoming ten times bigger while balancing expansion with profitability and sustainable development.



OpenRouter API key

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Trent Limited FAQ Chatbot

Ask questions about Trent Limited, Westside, Zudio, Samoh, and Star brands.

Your question: What brands does Trent operate?

Answer

Trent Limited operates four main brands: Westside (fashion and lifestyle), Zudio (value fashion), Samoh (premium Indian wear), and Star (food and grocery). Each brand serves distinct customer segments with differentiated value propositions. The company focuses on delivering quality, affordability, and enhanced customer experiences to diverse consumer segments across India through these brands.

Context used

FAQ Page 1 · score 0.371

Q1: What is Trent Limited and what does the company do?
Trent Limited is one of India's leading players in the branded lifestyle space, operating multiple fashion and lifestyle brands. The company owns and operates brands including Westside, Zudio, and Samoh in fashion, plus Star in food and grocery retail. Tre nt focuses on delivering quality, affordability, and enhanced customer experience to diverse consumer segments across India.

Setup & Configuration

```
python -m venv .venv
```

```
.venv\Scripts\activate
```

```
pip install -r requirements.txt
```

API key options:

- Sidebar input (masked)
- Environment variable: OPENROUTER_API_KEY
- Streamlit secrets: create .streamlit/secrets.toml with:

```
OPENROUTER_API_KEY = "sk-or-v1-..."
```

How to Run

```
streamlit run trent_faq_pdf_chatbot.py
```

Open the provided local URL. If needed, paste your API key in the sidebar. Ask a question and review the “Context used” panel for the supporting PDF snippets.

Conclusion

This project delivers a focused, PDF-grounded chatbot for Trent/Zudio that mirrors the original app’s API and UX while strictly constraining knowledge to FAQs_questions.pdf. The lightweight TF–IDF retriever provides dependable performance for FAQ-style questions and clear transparency of sources, satisfying the assignment’s requirements.

References

- Streamlit documentation — https://docs.streamlit.io
- scikit-learn: CountVectorizer, TfidfTransformer, cosine similarity — https://scikit-learn.org
- OpenRouter API — https://openrouter.ai

- PyPDF2 — https://pypi.org/project/PyPDF2

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