**Product Review Sentiment + Reasoning**

**Business Description:**

The e-commerce feedback team needs an automated way to classify customer reviews and

understand the emotional drivers behind negative feedback for escalation purposes. This tool

automates sentiment detection, explanation generation, and provides a rephrasing feature to create

Brand-friendly responses.

**Problem Identification and Importance:**

The need for swiftly and accurately classifying customer sentiments and understanding the underlying reasons for negative feedback is crucial in e-commerce. Automating this process not only enhances efficiency but also ensures that businesses can respond appropriately and maintain brand integrity.

**Business Application Powered by AI**

The application uses sentiment classification and LLM-based reasoning to process product reviews.

It identifies sentiment polarity, explains the reason, and can rephrase reviews in a brand-friendly tone. Integrated into the UI for seamless use.

**Embedded AI Features**

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| **Features** | **Description** |
| Sentiment Classification | Classifies reviews into Positive, Neutral or Negative using NLP models |
| LLM-Generated Reasoning | Generates a detailed explanation for the sentiment classification |
| Rephrase Capability | Rewrites reviews into neutral or brand-friendly tone. |
| Export Functionality | Allows exporting results to internal ticketing system. |

**System Flow**

1. User enters review text. 2. Sentiment analysis model classifies it. 3. LLM generates reasoning for

the classification. 4. Optional rephrasing is applied. 5. Results can be exported or copied.

**User Interface (Web Application)**

* **Cloud Hosting Link**: <https://huggingface.co/spaces/Ajapson/product-review-sentiment>

**Note:** The system is deployed on a cloud platform to ensure high availability and accessibility 24/7.

* **Link to UI:**  https://4a0b95d94c15db35a1.gradio.live/

**Note:** The UI provides a simple review input area that expires 72hours after created

**Block Diagram of the System**

**AI Services** (OpenAI API)

* Sentiment Classification
* Explanation Generator
* Rephrasing Engine

**Frontend U: Display result**

* Sentiment Badge
* Explanation Text
* Rephrased Review
* Export Button (Copy to Clipboard)

**User Input**

**Backend Controller**

(Python App Logic)

**Frontend UI** (Gradio)