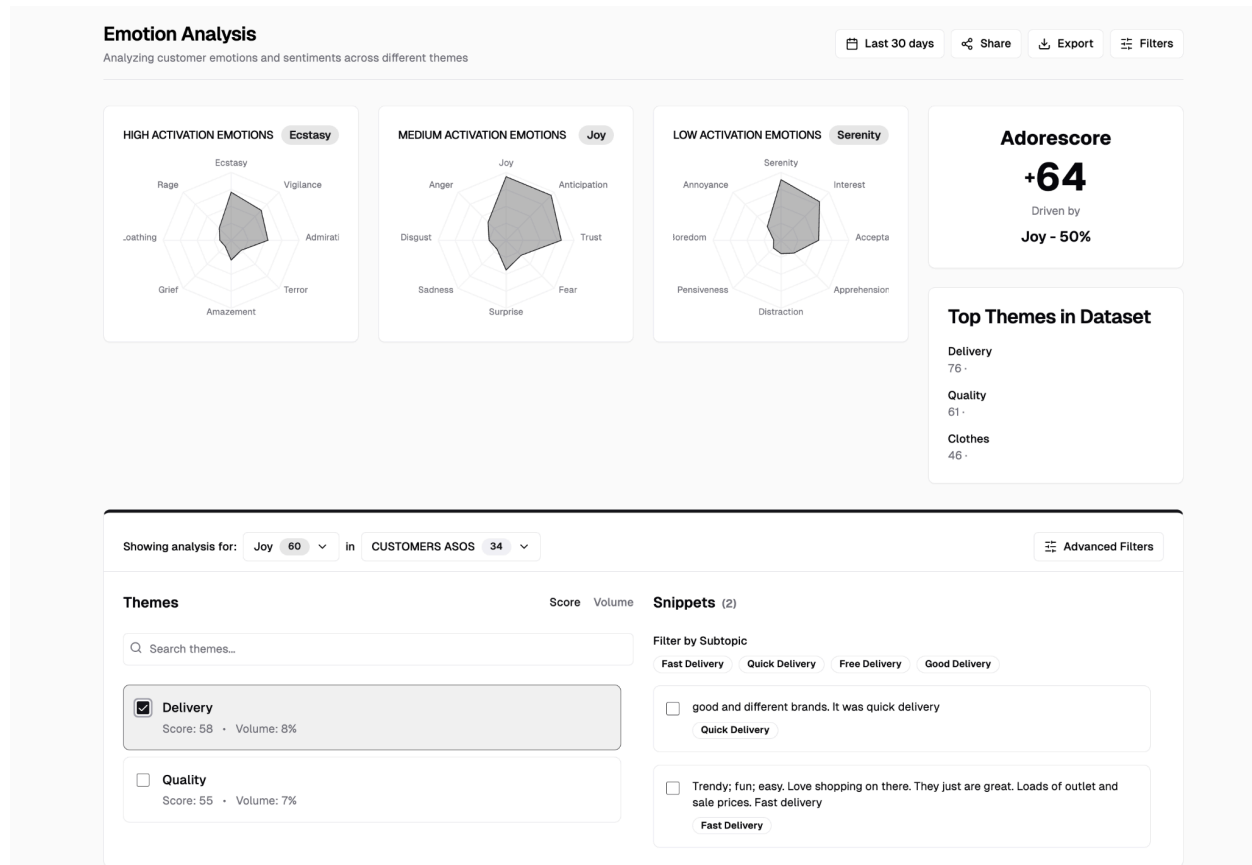


Customer Emotion Analysis System



Overview

Your task is to develop a **Customer Emotion Analysis System** that processes customer feedback to:

- **Extract emotions** and assess their intensity.
- **Identify topics** and subtopics within the feedback.
- **Calculate an engagement score (Adorescore)** to measure overall sentiment.

This system will enable businesses to better understand customer sentiment and take actionable steps to improve their services.

Core Requirements

1. Emotion Detection Engine

Develop a system capable of:

- Identifying and classifying emotions across **three activation levels** (High, Medium, Low).
- Mapping customer text to emotional states (e.g., Joy, Serenity, Ecstasy).
- Calculating **emotional intensity scores** for each feedback instance.
- Handling **multiple emotions** within a single piece of feedback.
- Providing **confidence scores** for emotion classifications.

2. Topic Analysis System

Implement a mechanism that:

- Extracts **main topics** from feedback (e.g., Delivery, Quality, Clothes).
- Identifies **subtopics** within those main topics (e.g., Fast Delivery, Quick Delivery, Free Delivery).
- Ensures **consistent topic/subtopic categorization** across feedback.
- Maintains a **topic hierarchy** and captures relationships.
- Provides **topic relevance scores** to measure importance.

3. Adorescore Calculation

Develop a scoring system that:

- Computes an **overall sentiment score (Adorescore)** ranging from **-100 to +100**.
- Weighs different emotional factors to derive a balanced score.
- Incorporates **topic relevance** in the scoring calculation.
- Provides **score breakdowns** by topic for deeper insights.
- Tracks **sentiment trends over time** to measure progress.

4. Analysis Integration

Ensure seamless integration between components:

- **Connect emotion detection with topic analysis.**
 - **Map emotions to specific topics and subtopics.**
 - **Generate theme-emotion correlation metrics.**
 - **Calculate per-topic emotional distributions.**
 - **Provide aggregated insights across dimensions.**
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Deliverables

1. Emotion Processing Module

- Emotion classification system.
- Activation level categorization.
- Emotion intensity calculator.

2. Topic Analysis Module

- Topic extraction system.
- Subtopic classifier.
- Topic hierarchy manager.

3. Scoring System

- Adorescore calculation engine.
- Score breakdown generator.
- Trend analysis component.

4. Documentation

- **System architecture overview.**
 - **Data flow diagrams.**
 - **API specifications.**
 - **Test cases and evaluation scenarios.**
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Evaluation Criteria

Your solution will be assessed based on:

1. Accuracy

- **Emotion detection precision.**
- **Topic classification reliability.**
- **Scoring system consistency.**

2. Scalability

- Ability to process **large volumes** of feedback.
- **Efficient resource utilization** and processing speed.

3. Usability

- **Clear, structured output.**
- **Interpretable insights** for decision-making.
- **Actionable recommendations** for businesses.

4. Innovation

- Novel approaches to **emotion detection**.
 - Creative methodologies for **topic analysis**.
 - Unique and effective **sentiment scoring techniques**.
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Constraints

- Must process text in **real-time**.
 - Should support **multiple languages**.
 - Must **maintain topic consistency** across feedback.
 - Should be **adaptable to different industries**.
 - Must provide **confidence scores** for all classifications.
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Sample Data Format

Input Text:

"The delivery was incredibly fast and the quality was amazing! However, one of the clothing items didn't fit well."

Expected JSON Output:

```
{
  "emotions": {
    "primary": {
      "emotion": "Joy",
      "activation": "Medium",
      "intensity": 0.8
    },
    "secondary": {
      "emotion": "Disappointment",
```

```
    "activation": "Low",
    "intensity": 0.3
  },
  "topics": {
    "main": ["Delivery", "Quality", "Clothes"],
    "subtopics": {
      "Delivery": ["Fast Delivery"],
      "Clothes": ["Fit"]
    }
  },
  "adorescore": {
    "overall": 64,
    "breakdown": {
      "Delivery": 85,
      "Quality": 78,
      "Clothes": 30
    }
  }
}
```