

GENERATIVE AND IT'S APPLICATIONS

Project- Title

Data Extraction & Insights-IT Ticket Prioritizer

NAME: CHRISTANANDA B	SRN:PES2UG23CS158
CLASS: C	DATE:28-01-2026

ABSTRACT:

In large number of service tickets are generated daily, making manual prioritization inefficient and error-prone. This project presents an IT Ticket Prioritization System that automatically classifies support tickets as Angry/Urgent or Neutral using transformer-based Generative AI models. The system leverages a pre-trained RoBERTa sentiment analysis model to detect the emotional tone of user messages and combines it with urgency detection logic to identify time-critical issues

Explanation :

In IT support systems, large numbers of tickets are generated every day. Manually checking each ticket to decide its priority is time-consuming and may lead to delays in handling urgent issues. Some tickets clearly express anger or urgency (such as system failures or service outages), while others are normal requests. The challenge is to automatically identify urgent tickets so that they can be handled first.

I developed an IT Ticket Prioritizer that automatically classifies support tickets into Angry/Urgent or Neutral categories. The system uses a pre-trained transformer-based model (RoBERTa) to analyze the sentiment of each ticket. Along with sentiment detection, the system checks for urgency-related keywords such as “*down*”, “*urgent*”, and “*unacceptable*”.

If a ticket shows negative sentiment or explicit urgency, it is assigned high priority (P1 – Immediate Attention). Otherwise, it is marked as normal priority (P3).

Output :

```
!pip install -q transformers torch sentencepiece

from transformers import pipeline

classifier = pipeline(
    "sentiment-analysis",
    model="cardiffnlp/twitter-roberta-base-sentiment"
)

/usr/local/lib/python3.12/dist-packages/huggingface_hub/utils/_auth.py:94: UserWarning:
The secret 'HF_TOKEN' does not exist in your Colab secrets.
To authenticate with the Hugging Face Hub, create a token in your settings tab (https://huggingface.co/settings/tokens), set it as secret in your Google Colab and restart your session.
You will be able to reuse this secret in all of your notebooks.
Please note that authentication is recommended but still optional to access public models or datasets.
warnings.warn(
config.json: 100% [██████████] 747/747 [00:00<00:00, 86.1kB/s]
pytorch_model.bin: 100% [██████████] 499M/499M [00:03<00:00, 183MB/s]
model.safetensors: 25% [███] 123M/499M [00:01<00:03, 103MB/s]
vocab.json: 899k? [00:00<00:00, 21.9MB/s]
merges.txt: 456k? [00:00<00:00, 29.5MB/s]
special_tokens_map.json: 100% [██████████] 150/150 [00:00<00:00, 5.37kB/s]
Device set to use cuda:0
```

```
def classify_ticket(ticket):
    result = classifier(ticket)[0]

    label = result["label"]      # LABEL_0, LABEL_1, LABEL_2
    score = result["score"]

    # RoBERTA sentiment mapping
    is_negative = label == "LABEL_0"

    # Urgency keywords
    urgent_keywords = [
        "down", "not working", "failure", "failed",
        "urgent", "asap", "immediately",
        "outage", "crash", "broken", "stopped",
        "unacceptable", "frustrated"
    ]

    is_urgent = any(word in ticket.lower() for word in urgent_keywords)

    # FINAL LOGIC
    if is_negative or is_urgent:
        category = "Angry/Urgent"
        priority = "P1 - Immediate Attention"
    else:
        category = "Neutral"
        priority = "P3 - Normal Priority"

    return {
        "ticket": ticket,
        "model_label": label,
        "confidence": round(score * 100, 2),
        "category": category,
        "priority": priority
    }
```

```
❸ test_tickets = [
    "My server is down and this is unacceptable!",
    "Please reset my password",
    "I want my ticket Urgent"
]

for t in test_tickets:
    print(classify_ticket(t))

...
{'ticket': 'My server is down and this is unacceptable!', 'model_label': 'LABEL_0', 'confidence': 97.78, 'category': 'Angry/Urgent', 'priority': 'P1 - Immediate Attention'}
{'ticket': 'Please reset my password', 'model_label': 'LABEL_1', 'confidence': 65.15, 'category': 'Neutral', 'priority': 'P3 - Normal Priority'}
{'ticket': 'I want my ticket Urgent', 'model_label': 'LABEL_1', 'confidence': 68.96, 'category': 'Angry/Urgent', 'priority': 'P1 - Immediate Attention'}
```