Generative AI and its Applications

PROJECT: Personal Diary Tracker

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SECTION:A

IMPLEMENTATION

Steps involved in building the Personal Diary Mood Tracker using BERT-based pipelines for sentiment analysis and named entity recognition.

STEP: 1 Installation of required packages:

!pip install transformers torch matplotlib pandas

pandas To perform NLP tasks, we need libraries that provide pretrained transformer models and their usage. The Transformers library helps us use NLP models. Torch serves as the backend for loading models. Pandas stores results in a tabular form, and Matplotlib creates mood graphs.

STEP: 2 Impoting libraries

from transformers import pipeline

import pandas as pd

import matplotlib.pyplot as plt

here pipeline gives pretrained models , pandas for storing diary and Matplotlib for graph

STEP : 3 Loading Pretrained Pipelines

The first pipeline is a sentiment analysis one which essentially categorizes the text into positive or negative sentiments. The emotional tone or sentiment of the user for each diary entry can be extracted using this pipeline. The model we picked, distilbert, base, uncased, finetuned, sst, 2, english, is a 'distilled' version of BERT that's specifically been trained for the sentiment classification task. The second pipeline is a named entity recognition (NER) one done by the bert, base, cased model. This picks up entities like people, organizations, and places mentioned in the diary text. NER is one of the things that help us figure out what kind of events, people, or surroundings are affecting the user's mood. The aggregation strategy unifies the tokens that are part of the same entity to form a single readable unit (e. g. , New + York New York).

STEP :4 Collecting Diary Inputs

Collecting inputs for a week

STEP: 5 Applying Sentiment and Entity Extraction

Each diary entry is supplied to both pipelines. Such dual processing gives us the advantage of not only pinpointing the user's feeling but also seeing what factors there are in their mood.

The sentiment label (positive/negative) marks the emotional category. The sentiment score shows how confident the model is. NER spots external factors like "exam", "Riya", "professor", "family", etc. For subsequent operations, the results are saved in a list.

STEP : 6 Storing Results in a DataFrame

A pandas DataFrame offers a well, organized format that resembles a table.

It becomes more convenient to do statistical calculations, examine a set of data, and plot graphs when data is visually presented in this form.

Using tabs to save the output of an NLP project with a focus on analysis is a must, have.

STEP : 7 Converting Mood Labels to Numeric Scores

Charts need to be based on numbers rather than texts.

The idea of mopping up sad moods with, 1 and happy moods with +1 is simple and effective for creating a plot.

This transformation helps to graphically illustrate the change of mood over different time intervals.

STEP : 8 Visualizing Weekly Mood Trend

It can be very helpful visualization tool to reflect mood changes across the period of a week.

The chart which has been drawn makes the whole emotional change story very clear.

The lattice and the points make the text easier to decipher.

Besides, this step further exposes the benefit of assigning numerical value to mood variable.

STEP : 9 Generating Weekly Insights

These statistics are generally easy to understand for the average person. The number of positive and negative days gives an idea of how overall balanced or tense the week was. Besides that, checking the most common named entities can also give an idea of the factors outside the person's control that have been affecting the mood, e. g. , exams, people, work.

STEP : 10 Weekly Summary Output

here we will generate weekly report , like this week was positive or negative