**📈 News Summarization, Sentiment Analysis & Text-to-Speech (TTS) 🎤**

**📌 Project Summary**

This project fetches the latest news articles, summarizes them, analyzes sentiment, and generates Hindi text-to-speech (TTS). It includes both a **Gradio web interface** and a **Flask API**, allowing users to interact via UI or API calls.

**📌 What Was Done?**

🔹 Developed a web-based **news analysis tool** to extract insights from news articles  
🔹 **Fetched news** articles using the NewsAPI service  
🔹 **Summarized** articles using NLP models  
🔹 **Performed sentiment analysis** (Positive, Negative, Neutral)  
🔹 **Compared sentiment trends** across multiple articles  
🔹 **Generated Hindi speech output** using Google Text-to-Speech (gTTS)  
🔹 **Built a Gradio UI** for user-friendly interaction  
🔹 **Created a Flask API** for programmatic access  
🔹 **Managed dependencies** with requirements.txt  
🔹 **Documented everything** in README.md

**📆 Expected Output**

After entering a company name (e.g., **Tesla**), the system will:

🔹 **Fetch the latest news articles** about Tesla  
🔹 **Summarize the news content** using NLP  
🔹 **Analyze the sentiment** of each news article (Positive, Negative, Neutral)  
🔹 **Compare sentiment trends** across multiple news articles  
🔹 **Generate a Hindi audio file** summarizing the news  
🔹 **Display results in the Gradio UI** or return JSON responses via API

**Example Output (Gradio UI or API Response):**

{

"title": "Tesla Stock Rises After Earnings Report",

"summary": "Tesla's stock surged after a strong earnings report, exceeding analyst expectations.",

"sentiment": "POSITIVE",

"confidence": 0.95,

"tts\_audio": "summary\_audio.mp3"

}

**📂 Project Structure & File Descriptions**

Below is a breakdown of all the files in the project and their purpose:

| **📂File Name** | **📈 Description** |
| --- | --- |
| **app.py** | The **main script** that runs the Gradio web app. Allows users to enter a company name and get summarized news with sentiment analysis and TTS. |
| **api.py** | Flask-based API that supports **RESTful endpoints** for fetching news, summarization, sentiment analysis, and TTS generation. |
| **utils.py** | Contains **reusable utility functions** for fetching news, summarization, sentiment analysis, and text-to-speech conversion. |
| **requirements.txt** | Lists all the **dependencies** required to run the project. Install them using pip install -r requirements.txt. |
| **environment.yml** | An alternative to requirements.txt for **Conda users**, allowing environment setup with conda env create -f environment.yml. |
| **README.md** | Detailed documentation including **setup instructions, usage guide, API details, and project description**. |
| **summary\_audio.mp3** | The **Hindi text-to-speech output** generated from the news summary (Generated at runtime). |

**🚀 Setup & Installation**

**1️ Install Dependencies**

Using pip:

pip install -r requirements.txt

**2️ Run the Gradio App**

python app.py

**3️ Run the Flask API**

python api.py

**4️ Test with Sample Data**

python -c "import utils; print(utils.fetch\_news('Tesla'))"

**📢 Next Steps**

1️ **Ensure all files are saved in the project directory**  
2️ **Zip the entire folder** (including app.py, api.py, utils.py, requirements.txt, etc.)  
3️ **Submit the ZIP file** as per assignment requirements  
4️ **Test your Gradio UI and API locally before submission**

**📣 Final Thoughts**

This project is a **powerful AI-driven tool** for news analysis, helping users **quickly summarize and understand news trends** about a company. It provides a **user-friendly interface** via Gradio and **programmatic access** via APIs, making it useful for researchers, investors, and business analysts.