Real-Time Multilingual Translator

This project is a **Real-Time Multilingual Translator** web application that uses **speech recognition** and **speech synthesis** to provide live translations of spoken language. Users can select their input language, begin speaking, and receive a translated output in a different language. The application is powered by **Flask** (backend) and **Google Cloud Translation API** to perform the actual translation of text.

Features

1. **Speech-to-Text**: Uses the browser's speech recognition capabilities to convert spoken language into text.
2. **Text Translation**: Sends the transcribed text to the Flask server, which uses Google Cloud Translation API to translate the text into the desired language.
3. **Text-to-Speech**: After translation, the app reads out the translated text aloud in the target language.

File Structure

- **index.html**: The front-end interface for the translator.
- **app.py**: The back-end server written in Python using Flask, which processes translation requests.
- **key.json**: Google Cloud credentials.

Code Overview

index.html - Front-End

- **HTML Structure**: The layout includes two dropdown menus to select the input and output languages, two text areas to display the original and translated text, and two buttons for listening and speaking out the translation.
- **JavaScript**:
    - **Speech Recognition**: The app checks for webkitSpeechRecognition support (for Chrome browsers) to convert spoken language to text. Once text is transcribed, it is sent to the backend for translation.
    - **Translation API Call**: The transcribed text and selected target language are sent to the backend using a fetch request. The backend responds with the translated text.
    - **Speech Synthesis**: The translated text is read aloud using the browser's SpeechSynthesis API.

app.py - Back-End (Flask)

- **index route (/)**: Serves the HTML file to the user.
- **translate_text route (/translate)**: Receives translation requests, processes them using the Google Cloud Translation API, and returns the translated text.
- **Google Cloud Translation**: This API is used to convert text from one language to another. The Google Cloud credentials are required to authenticate requests.

Usage Instructions

1. **Open the Web Application**:
    - Start the Flask server and open the URL displayed in the terminal (usually http://127.0.0.1:5000/).
2. **Select Input and Output Languages**:
    - Choose your input (spoken) language and the desired output (translated) language from the dropdown menus.
3. **Start/Stop Listening**:
    - Click "Start Listening" and begin speaking in the selected input language. The app will transcribe your speech in real-time.
    - Click "Stop Listening" to end the transcription.
4. **Translation**:
    - After the text is transcribed, it is automatically sent to the Flask backend, where it is translated and displayed in the "Translated Transcript" area.
5. **Speak Translation**:
    - Click "Speak Translation" to have the translated text read aloud in the target language.

P.S.: The translation of the transcribed file is not working, after a lot of trying and exploring many possibilities it still does not translate the text in the output language. I believe it is an issue with the Google cloud API key as the used key can be the wrong part in the code because the "Cloud Translation API" is a paid API and cannot be integrated in the code without payment so the key generated without enabling this API might be the main issue.

This README provides a detailed overview and user guide for setting up and using your Real-Time Multilingual Translator. Let me know if you'd like to expand any specific sections!