Application with HuggingFace API and Gradio.io

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Introduction

For this project, I used the Hugging Face API and Gradio to create a web interface for machine translation, which is a task we did not cover in class. I chose translation because I find it interesting, especially since Canada has many spoken languages.

The interface translates English into six common languages in Canada: French, Mandarin, Arabic, Spanish, Italian, and German. I also tried to add transliteration for Arabic and Mandarin, so users could see how the words are pronounced. However, I wasn't able to get this working properly because there weren't good pre-trained models for transliteration on Hugging Face.

This project helped me understand how to use different pipelines and build an interactive interface using Gradio, but I would like to explore more using html instead of json to make my output look better.

Interface Explanation

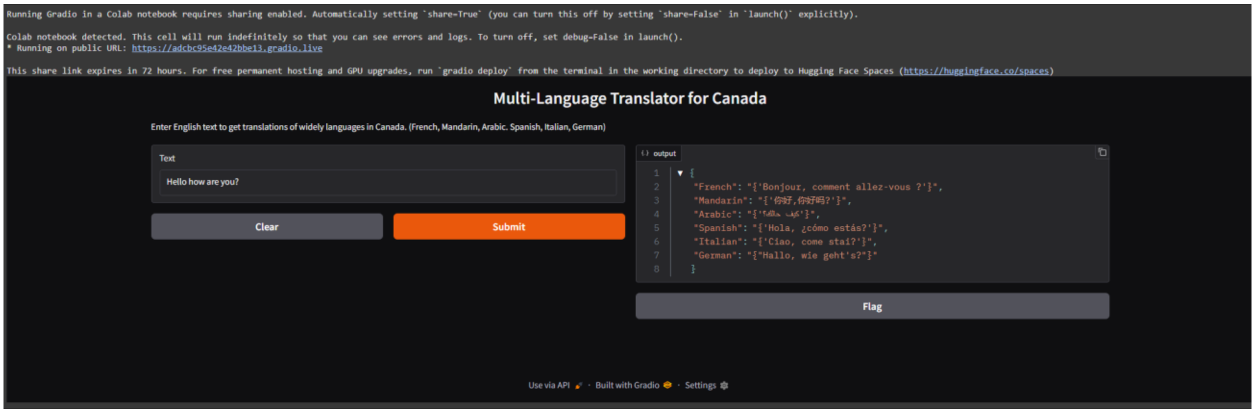
The interface contains a single text input field where users can enter any English phrase or sentence. Upon clicking the Submit button, the interface uses Hugging Face's transformers library to process the input through pre-trained translation models, displaying the translated results in each language. A Clear button is also provided to reset the input.

The main objective of this interface is to demonstrate the practical application of natural language processing (NLP) using machine translation models. It also showcases how user-friendly interfaces can be integrated with powerful machine learning models via Gradio and Hugging Face APIs. This type of application can be extended to support multicultural communication, tourism tools, language learning platforms and multilingual support systems. Personally as a newcomer to Canada, I like an interface as such to showcase all popular languages I can use to translate amongst the diverse community.

- The interface is deployed using Gradio and can be shared or embedded as per Gradio.
- Each translation is powered by a specific Hugging Face pipeline

French	"Helsinki-NLP/opus-mt-en-fr",
Mandarin	"Helsinki-NLP/opus-mt-en-zh",
Arabic	"Helsinki-NLP/opus-mt-en-ar",
Spanish	"Helsinki-NLP/opus-mt-en-es",
Italian	"Helsinki-NLP/opus-mt-en-it",
German	"Helsinki-NLP/opus-mt-en-de"

Output:



```
Running Gradio in a Colab notebook requires sharing enabled. Automatically setting `share=True` (you can turn this off by setting `share=False` in `launch()` explicitly).

Colab notebook detected. This cell will run indefinitely so that you can see errors and logs. To turn off, set debug=False in launch().
* Running on public URL: https://adcbc95e42e42bbe13.gradio.live

This share link expires in 72 hours. For free permanent hosting and GPU upgrades, run `gradio deploy` from the terminal in the working directory to deploy to Hugging Face Spaces (https://huggingface.co/spaces)
```

Multi-Language Translator for Canada

Enter English text to get translations of widely languages in Canada. (French, Mandarin, Arabic. Spanish, Italian, German)

Text: Hello how are you?

output

```
{
  "French": "{'Bonjour, comment allez-vous ?'}",
  "Mandarin": "{'你好,你好吗?'}",
  "Arabic": "{'كيف حالك؟'}",
  "Spanish": "{'Hola, ¿cómo estás?'}",
  "Italian": "{'Ciao, come stai?'}",
  "German": "{"Hallo, wie geht's?"}"
}
```