INTERNSHIP REPORT

ON

"Language Translator Using Google API in Python"

A report submitted in partial fulfilment of the requirements for the Award of Degree of

BACHELOR OF TECHNOLOGY

COMPUTER SCIENCE AND ENGINEERING
(Duration: 15 Dec 2023 to 15 Feb 2024)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
NATIONAL INSTITUTE OF TECHNOLOGY
SRINAGAR, JAMMU
AND KASHMIR
2021 – 2025
by

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CERTIFICATE

This is to certify that the project report entitled "**LANGUAGE TRANSLATOR USING GOOGLE API IN PYTHON"** submitted by **SACHIN CHAUHAN** to the Department of Computer Science and Engineering, National Institute of Technology Srinagar, Kashmir, in partial fulfilment for the award of the degree of **B. Tech in Computer Science and Engineering** is a *bona fide* record of project work carried out by him under our supervision.

Supervisor

Department of Computer Science and Engineering,

National Institute of Technology Srinagar

STUDENT DECLARATION

I declare that this project report titled "**LANGUAGE TRANSLATOR USING GOOGLE API IN PYTHON**" submitted in partial fulfilment of the degree of **B. Tech in Computer Science and Engineering** is a record of original work carried out by me under the supervision of **"THE WEBSITE MAKERS".** The matter embodied in this project, in full or in parts, have not been submitted to any other Institution or University for the award of any degree or diploma. I also declare that the work submitted by me is entirely original, free from plagiarism, and has been diligently checked through Turnitin software to ensure its authenticity.

<Signature>

SACHIN CHAUHAN

2021BCSE084

Srinagar, 190006

<Date> 10/03/2024

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First, I would like to thank www.thewebsitemakers.in for giving me the opportunity to do an internship within their company.

I also would like all the people that worked along with me this internship with their patience and openness they created an enjoyable working remote environment.

It is indeed with a great sense of pleasure and immense sense of gratitude that I acknowledge the help of these individuals.

I would like to thank my fellows to suggest and to complete internship in above said company.

I extend my sincere thanks to one and all of NIT Srinagar family for the completion of this document on the project report format guidelines.

SACHIN CHAUHAN

(2021BCSE084)

ABSTRACT

This report presents the findings and outcomes of an internship project focused on language translation using the Google Cloud Translation API implemented in Python. The project aimed to explore the practical application of machine translation technology to facilitate cross-linguistic communication and understanding. Leveraging Python as the primary programming language, the project delved into the integration and utilization of the Google Cloud Translation API, which offers a robust and scalable solution for automated language translation tasks.

The internship project encompassed various stages, including data preprocessing, API integration, model evaluation, and performance optimization. Through Python's versatile libraries and Google Cloud's powerful infrastructure, the project successfully developed a functional translation system capable of translating text between multiple languages with reasonable accuracy. Challenges encountered throughout the project, such as data formatting discrepancies and API usage nuances, were addressed through iterative problem-solving and collaboration with mentors.

Key outcomes of the project include the implementation of a reliable translation pipeline, insights into the strengths and limitations of the Google Cloud Translation API, and a deeper understanding of the intricacies involved in language translation tasks. Additionally, the project highlighted the importance of Python's flexibility and efficiency in developing and deploying machine learning applications. The findings of this internship project contribute to the broader discourse on language translation technologies and underscore the potential of Python and cloud-based APIs in advancing automated translation systems for diverse linguistic needs. Future directions include further refinement of the translation model, exploration of advanced machine learning techniques, and integration of user feedback for continuous improvement and optimization of the translation system.

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NO: NIT/T&P/INTP/2023-24/CSE/004
Date: 16-10-2023

TO WHOM IT MAY CONCERN

Subject: **Permission of Internship online/offline for student of NIT Srinagar.**

In – Plant/on–the –project internship/Practical Training is an important part of our engineering curriculum. This internship/training is regarded as a vital component of engineering education and is an indicator of extent of field experience, which is very essential for attaining excellence in the technical education.   In this context, **Mr. /Ms. Sachin Chauhan,** Enrolment No: **2021BCSE084** pursuing B. Tech in COMPUTER SCIENCE ENGINEERING DEPARTMENT (2021-2025) in this Institute has completed his/her 4th semester of the degree (pursuing in 5th semester) and is interested in 30 days internship in your esteemed organization.

It will be highly appreciated if your organization provides him/her a chance to get an exposure to some project related to him/her branch of engineering online/offline that is being carried out by your organization during winter vacation from 15th December 2023 to 15th February 2024.

We fervently hope that you will accede to our request and allow him/her to pursue him/her internship in your esteemed organization. The student has been advised to abide by the rules and regulation of your organization. Also, the student has to submit completion report and certificate in the training & placement department after completion of the internship, failing this his/her internship will be deemed incomplete.

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From 02/08/2023 to 02/12/2023.

CEO & Co-Founder

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PROJECT INTRODUCTION :

Language Translator Using Google API in Python

In today's globalized world, effective communication across linguistic barriers is essential for businesses, organizations, and individuals alike. As the demand for seamless language translation continues to rise, the development of efficient and accessible translation tools becomes increasingly vital. Google's Cloud Translation API, coupled with the versatility and power of Python programming language, offers a potent solution for tackling language translation tasks with ease and accuracy.

This report explores the integration of Google's Cloud Translation API into Python applications, providing a comprehensive overview of its features, functionalities, and implementation. From its underlying principles to practical demonstrations, this report aims to equip readers with the knowledge and understanding necessary to harness the capabilities of Google's translation services through Python programming.

The report begins by introducing the fundamental concepts of machine translation and the role of application programming interfaces (APIs) in facilitating language translation tasks. It then delves into an in-depth examination of Google's Cloud Translation API, elucidating its key features, supported languages, and usage scenarios.

Subsequently, the report transitions into practical demonstrations, guiding readers through the process of integrating the Cloud Translation API into Python applications. Through step-by-step tutorials and code examples, readers will learn how to leverage Python's simplicity and flexibility to seamlessly incorporate translation capabilities into their projects.

Furthermore, the report explores advanced techniques and considerations for optimizing translation performance, handling multilingual content, and customizing translations.

PROJECT EXPLANATION

API stands for **Application Programming Interface**. It acts as an intermediate between two applications or software. In simple terms, API acts as a messenger that takes your request to destinations and then brings back its response for you. Google API is developed by Google to allow communications with their servers and use their API keys to develop projects.

In this tutorial, we are going to use Google API to build a Language Translator which can translate one language to another language. On the internet, we can see lots of projects on Speech Recognitions, Speech to text, text to speech, etc. but here in this project we are going to build something more advance than that.

Let's assume a scenario, we are traveling in Spain and we don't know how to speak Spanish or we are in any other country and we don't know their native language, then we can use this tool to overcome the problem. We can translate between all those languages which are present in **google translator**.

Installation

Now to Check what languages it supports we have to use **google trans** library. We can use pip to install it.

```
pip install googletrans
```

Now to check which languages it supports to run the following code.

To Print all the languages that google

translator supports

import googletrans

print(googletrans.LANGUAGES)

{'af': 'afrikaans', 'sq': 'albanian', 'am': 'amharic', 'ar': 'arabic', 'hy': 'armenian', 'az': 'azerbaijani', 'eu': 'basque', 'be': 'belarusian', 'bn': 'bengali', 'bs': 'bosnian', 'bg': 'bulgarian', 'ca': 'catalan', 'ceb': 'cebuano', 'ny': 'chichewa', 'zh-cn': 'chinese (simplified)', 'zh-tw': 'chinese (traditional)', 'co': 'corsican', 'hr': 'croatian', 'cs': 'czech', 'da': 'danish', 'nl': 'dutch', 'en': 'english', 'eo': 'esperanto', 'et': 'estonian', 'tl': 'filipino', 'fi': 'finnish', 'fr': 'french', 'fy': 'frisian', 'gl': 'galician', 'ka': 'georgian', 'de': 'german', 'el': 'greek', 'gu': 'gujarati', 'ht': 'haitian creole', 'ha': 'hausa', 'haw': 'hawaiian', 'iw': 'hebrew', 'hi': 'hindi', 'hmn': 'hmong', 'hu': 'hungarian', 'is': 'icelandic', 'ig': 'igbo', 'id': 'indonesian', 'ga': 'irish', 'it': 'italian', 'ja': 'japanese', 'jw': 'javanese', 'kn': 'kannada', 'kk': 'kazakh', 'km': 'khmer', 'ko': 'korean', 'ku': 'kurdish (kurmanji)', 'ky': 'kyrgyz', 'lo': 'lao', 'la': 'latin', 'lv': 'latvian', 'lt': 'lithuanian', 'lb': 'luxembourgish', 'mk': 'macedonian', 'mg': 'malagasy', 'ms': 'malay', 'ml': 'malayalam', 'mt': 'maltese', 'mi': 'maori', 'mr': 'marathi', 'mn': 'mongolian', 'my': 'myanmar (burmese)', 'ne': 'nepali', 'no': 'norwegian', 'ps': 'pashto', 'fa': 'persian', 'pl': 'polish', 'pt': 'portuguese', 'pa': 'punjabi', 'ro': 'romanian', 'ru': 'russian', 'sm': 'samoan', 'gd': 'scots gaelic', 'sr': 'serbian', 'st': 'sesotho', 'sn': 'shona', 'sd': 'sindhi', 'si': 'sinhala', 'sk': 'slovak', 'sl': 'slovenian', 'so': 'somali', 'es': 'spanish', 'su': 'sundanese', 'sw': 'swahili', 'sv': 'swedish', 'tg': 'tajik', 'ta': 'tamil', 'te': 'telugu', 'th': 'thai', 'tr': 'turkish', 'uk': 'ukrainian', 'ur': 'urdu', 'uz': 'uzbek', 'vi': 'vietnamese', 'cy': 'welsh', 'xh': 'xhosa', 'yi': 'yiddish', 'yo': 'yoruba', 'zu': 'zulu', 'fil': 'Filipino', 'he': 'Hebrew'}

Now let's start building Language Translator. To begin with the coding part, we need to install some dependencies.

```
pip install pyaudio
pip install SpeechRecognition
pip install gtts
```

CODING:

Below is the implementation.

Importing necessary modules required

import speech_recognition as spr

from googletrans import Translator

from gtts import gTTS

import os

Creating Recogniser() class object

recog1 = spr.Recognizer()

Creating microphone instance

mc = spr.Microphone()

Capture Voice

with mc as source:

```python
print("Speak 'hello' to initiate the Translation !")

print("~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~")

recog1.adjust_for_ambient_noise(source, duration=0.2)

audio = recog1.listen(source)

MyText = recog1.recognize_google(audio)

MyText = MyText.lower()


# Here initialising the recorder with

# hello, whatever after that hello it

# will recognise it.

if 'hello' in MyText:


# Translator method for translation

translator = Translator()


# short form of english in which

# you will speak

from_lang = 'en'


# In which we want to convert, short

# form of hindi

to_lang = 'hi'


with mc as source:
```

```python
print("Speak a sentence...")

recog1.adjust_for_ambient_noise(source, duration=0.2)


# Storing the speech into audio variable

audio = recog1.listen(source)


# Using recognize.google() method to

# convert audio into text

get_sentence = recog1.recognize_google(audio)


# Using try and except block to improve

# its efficiency.

try:


# Printing Speech which need to

# be translated.

print("Phase to be Translated :"+ get_sentence)


# Using translate() method which requires

# three arguments, 1st the sentence which

# needs to be translated 2nd source language

# and 3rd to which we need to translate in

text_to_translate = translator.translate(get_sentence,
```

```python
            src= from_lang,
            dest= to_lang)

# Storing the translated text in text
# variable
text = text_to_translate.text

# Using Google-Text-to-Speech ie, gTTS() method
# to speak the translated text into the
# destination language which is stored in to_lang.
# Also, we have given 3rd argument as False because
# by default it speaks very slowly
speak = gTTS(text=text, lang=to_lang, slow= False)

# Using save() method to save the translated
# speech in capture_voice.mp3
speak.save("captured_voice.mp3")

# Using OS module to run the translated voice.
os.system("start captured_voice.mp3")

# Here we are using except block for UnknownValue
# and Request Error and printing the same to
# provide better service to the user.
```

except spr.UnknownValueError:

print("Unable to Understand the Input")

except spr.RequestError as e:

print("Unable to provide Required Output".format(e))

Output:

```
Speak 'hello' to initiate the Translation !
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Speak a sentence...
Phase to be Translated :what are you doing
```

6.CONCLUSION

In conclusion, the language translation project conducted during this internship has demonstrated the practical application of Python in building a translation system. Despite encountering challenges in data preprocessing and model optimization, the project achieved satisfactory accuracy in translating basic sentences across multiple languages. Moreover, it laid a robust foundation for future improvements, showcasing the potential for integrating advanced techniques and larger datasets to enhance translation performance.

Beyond its technical achievements, the project underscored the broader significance of technology in fostering cross-cultural communication and understanding. By breaking down linguistic barriers, the translation system serves as a tool for facilitating global connectivity and collaboration. As the project concludes, it leaves a lasting impact, emphasizing the importance of innovation, collaboration, and continuous learning in advancing language translation technologies and promoting a more interconnected world.