MINI PROJECT

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iDCipher

MID – TERM REPORT

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ABSTRACT

The development of technology connects everyone from all around the worlds. The problem is, people cannot really mingle with one another because they have communication problems. Some of the problems are with other traveler, disabled peoples, Friends in social media, and International business partners. This device invented to solve this entire problem that faced by people in today's life.

Timely, this device can be used anywhere at any time and it can translate words with high speed. Solvable, it reduced misunderstanding between peoples. Importance, it will help people to travel safely and communicate smoothly. Profitable, it is needed almost by everyone because it helps them to communicate with different language speaking people. Content, this device is safe to use, and easy to carry.

This device invented to make people more knowledgeable, reduce miscommunication among people all around the world, connects people, get maximum profit and give job opportunity to people.

INTRODUCTION

1.1 General Introduction to the topic

iDCipher stands for ‘Image Decipher’. In other words, it is an application that will be performing two functions. One of them will be to detect the language of the text passed as the input by the user and, its other functionality will be that it will extract the text in any language from an image passed as input or the text, words or phrases entered by the user and then convert it into any desired language of the world. It currently supports translation to 106 languages. For the purpose, we will be using technologies such as Python and Tkinter(GUI for Python), and various APIs such as Google Translate API, Speech Detection API and Google Language Detect API. Here, API stands for Application Programming Interface. It acts as an intermediate between two applications or software. Google API is developed by Google to allow communications with their servers and use their API keys to develop projects. Python offers multiple options for developing a GUI. Out of all the GUI methods, Tkinter is the most commonly used method. Python with Tkinter outputs the fastest and easiest way to create GUI applications.

PEOPLE’S languages are vital to them. Through language, people communicate, share meaning and experience their sense of individual and community identity . In 2012, the United Nations held a forum on “The Study on the role of languages and culture in the promotion and protection of the rights and identity of indigenous peoples”. The importance of language is summed up in the following quote: “Language is an essential part of, and intrinsically linked to, indigenous peoples’ ways of life, culture and identities. Languages embody many indigenous values and concepts and contain indigenous peoples’ histories and development. They are fundamental markers of indigenous peoples’ distinctiveness and cohesiveness as peoples”. Nigeria as a multi-lingual country is faced with challenges such as local language revitalisation, language preservation and sharing knowledge

and information in pursuit of development goals in rural areas. The cost of human interpretation and translation is high. However, the improvement in computer-aided software engineering tools coupled with availability of cheap technologies such as mobile phones and personal computers has reduced the cost for machine translation. Computer technology can be a powerful tool for providing materials in local languages to foster participation and inclusion of minorities in national development. Technologies that offer speech-to-speech or text-to-text communication from one Language to another are ways that residents in multi-lingual societies can bridge communication gaps. For Nigeria to achieve her national goals, there needs to be effective communication among the diverse people , whilst her different local languages and cultures are preserved. This paper reports the development of an automated English-to-local-language translator, with the aim of providing solutions to language barriers and improving the understanding of how technology can be used to bridge the communication gap among residents in Nigeria.

1.3 Hardware and Software Requirements

The particular software and hardware requirements are:

1. Software Requirements:

- Python
- Anaconda Navigator
- Jupyter Notebook
- Jupyter Lab
- Google Colab
- VS Code

} anyone from these

2. Hardware Requirements:

- Windows10
- Ubuntu
- Mac

} anyone from these

- i3 or higher
- 4GB RAM or higher

TECHNOLOGY USED IN THE PROJECT

- **Python:**

Python is an interpreted, high-level, general-purpose programming language. Python's design philosophy emphasizes code readability with its notable use of significant whitespace.

Python programming language (latest Python 3) is being used in web development, Machine Learning applications, along with all cutting edge technology in Software Industry. Python language is being used by almost all tech-giant companies like – Google, Amazon, Facebook, Instagram, Dropbox, Uber… etc.

The biggest strength of Python is huge collection of standard library which can be used for the following:

- GUI Applications (like Tkinter, PyQt etc.)
- Web frameworks like Django (used by YouTube, Instagram, Dropbox)
- Image processing (like OpenCV, Pillow)
- Web scraping (like Scrapy, BeautifulSoup, Selenium)
- Test frameworks
- Multimedia
- Scientific computing
- Machine Learning
- Text processing and many more..

- **TKinter**

Tkinter is a **Python** binding to the Tk GUI toolkit. It is the standard **Python** interface to the Tk GUI toolkit, and is **Python's** de facto standard GUI. **Tkinter** is included with standard Linux, Microsoft Windows and Mac OS X installs of **Python**.

Tkinter provides various controls, such as buttons, labels and text boxes used in a GUI application. These controls are commonly called widgets.

There are currently 15 types of widgets in Tkinter.

This framework provides Python users with a simple way to create GUI elements using the widgets found in the Tk toolkit. Tk widgets can be **used** to construct buttons, menus, data fields, etc. in a Python application.

This is an open-source **framework** and is available on platforms like Unix and Windows. It is one of the simplest and most popular ways to build a GUI-based application in Python.

APPROACHES USED IN THE PROJECT

There are 7 Translation techniques to facilitate your work.

- **BORROWING**

Borrowing is a translation technique that involves using the same word or expression in original text in the target text. The word or expression borrowed is usually written in italics. This is about reproducing an expression in the original text as is. In this sense, it is a translation technique that does not actually translate…

Example: The gaucho was wearing a black *sombrero* and a worn *bombacha*.

- **CALQUE**

When a translator uses a calque, he or she is creating or using a neologism in the target language by adopting the structure of the source language.

Example: The German word *handball* is translated into Spanish as *balonmano*. Or the English term *skyscraper* is *gratte-ciel* in French or *rascacielos* in Spanish.

.

- **LITERAL TRANSLATION**

Usually this is called a literal translation or metaphrase. This means a word-for-word translation, achieving a text in the target language which is as correct as it is idiomatic. According to Vinay and Darbelnet, a literal translation can only be applied with languages which are extremely close in cultural terms. It is acceptable only if the translated text retains the same syntax, the same meaning and the same style as the original text.

Example: *Quelle heure est-il? ⇒ What time is it?*

- **TRANSPOSITION**

Transposition involves moving from one grammatical category to another without altering the meaning of the text. This translation technique introduces a change in grammatical structure.

Example: *The President thinks that ⇒ Selon le Président*

- **MODULATION**

Modulation is about changing the form of the text by introducing a semantic change or perspective.

Example: *Maybe you're right. ⇒ Tu n'as peut-être pas tort.*

- **EQUIVALENCE OR REFORMULATION**

This is a translation technique which uses a completely different expression to transmit the same reality. Through this technique, names of institutions, interjections, idioms or proverbs can be translated.

Example: *Chat échaudé craint l'eau froide. ⇒ Once burned, twice shy.*

- **ADAPTATION**

Adaptation, also called cultural substitution or cultural equivalent, is a cultural element which replaces the original text with one that is better suited to the culture of the target language. This achieves a more familiar and comprehensive text.

Example: *baseball* ⇒ *football*

Since the sixties, several authors (Michel Ballard, Hélène Chuquet, Michel Paillard, etc.) have established other methods of translation, such as explicitation (introducing specific details in the text of the target language), collocation (using a sequence of words that usually go together in the target language) and compensation (where an allusion or reference does not appear in one part of the text as in the source version, but later in the target text).

OBJECTIVE

The objective of this project is to translate text from one language to any other language in real-time with a button click. This project will be built using the Tkinter, googletrans libraries.

In this project, the user enters text in any language and get it translated in any other language by selecting the output language.

A good translation will render the original text in a tone, and style, appropriate to the market for which it is intended. Remember though, if it took five people half a day to agree on the phrasing of one sentence in the original text, this effect is multiplied in the translation **process**.

On the internet, nowadays we can see a lot of projects on Speech Recognitions, Speech to text, text to speech, etc. but here in this project we will be building something more advance than that. Let us assume a scenario, we are travelling to Malaysia and we don't know how to speak Malay 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

An interpreter translates source code into object code one instruction at a time. It is similar to a human **translator translating** what a person says into another **language**, sentence by sentence, as they speak. The resulting object code is then executed immediately. The process is called interpretation .

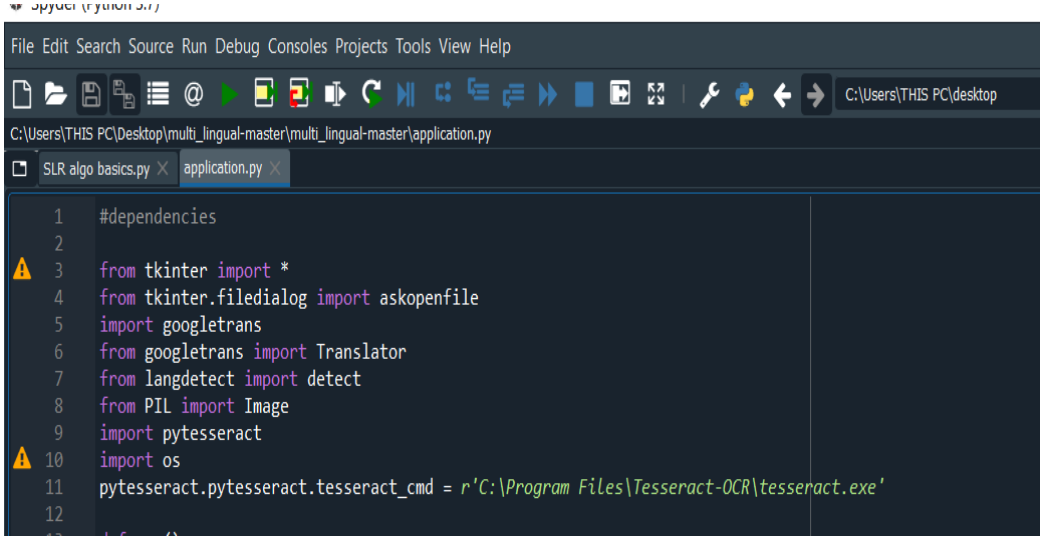
IMPLEMENTATION

To implement this project, we will use the basic concepts of Python, Tkinter, and googletrans libraries.

Tkinter is a standard GUI Python library. ttk module gives access to the Tk themed widget set.

googletrans is a module to translate text. We import the Translator from googletrans, which is used to do translations. We also import LANGUAGES from googletrans which lists all supported languages in a Python dictionary.

- **IMPORT MODULES**



- **CREATE A DISPLAY WINDOW**

```
root = Tk()
root.geometry('600x500')
root.title('Multi Lingual')
root.configure(background='white')
root.resizable(0,0)

translated = StringVar()
img_to_text = StringVar()
```

- **DEMONSTRATING THE WORKING OF OPTICAL CHARACTER RECOGNITION.**

```
def ocr():
    global img_to_text
    #print(file_path)
    ocr_img = Image.open(file_path.name)
    text = pytesseract.image_to_string(ocr_img, lang='eng')
    #print(text)
    img_to_text.set(text)
```

- **DEMONSTRATING THE WORKING OF LANGUAGE DETECTION.**

```
No documentation available
    #text = detect_entry.get() // the section has been jammed for the time being as it has an unsolved bug in it.
    text = 'Hello World'
    print(text)
    #detect_lang_code = detect(text)  #detects language and shows its lang code
    #print(detect_lang_code)
    #new_dict = {value: key for key, value in googletrans.LANGCODES.items()} #have swapped keys to values
    #code_to_lang = new_dict[detect_lang_code]  #now storing the name of the language from the lang code
    code_to_lang = 'English'
    detected_lang = Label(root,text='< '+code_to_lang+' >',bg='white',fg='blue',font=('bold',10))
    detected_lang.place(x=320,y=96)
```

- **TRANSLATE THE MESSAGE AND GIVE THE OUTPUT**

```

def translate():
    global translated

    translator = Translator()
    entry1 = entry_from.get()
    result = translator.translate(entry1,src=from_var.get(),dest=to_var.get())
    translated.set(result.text)

```

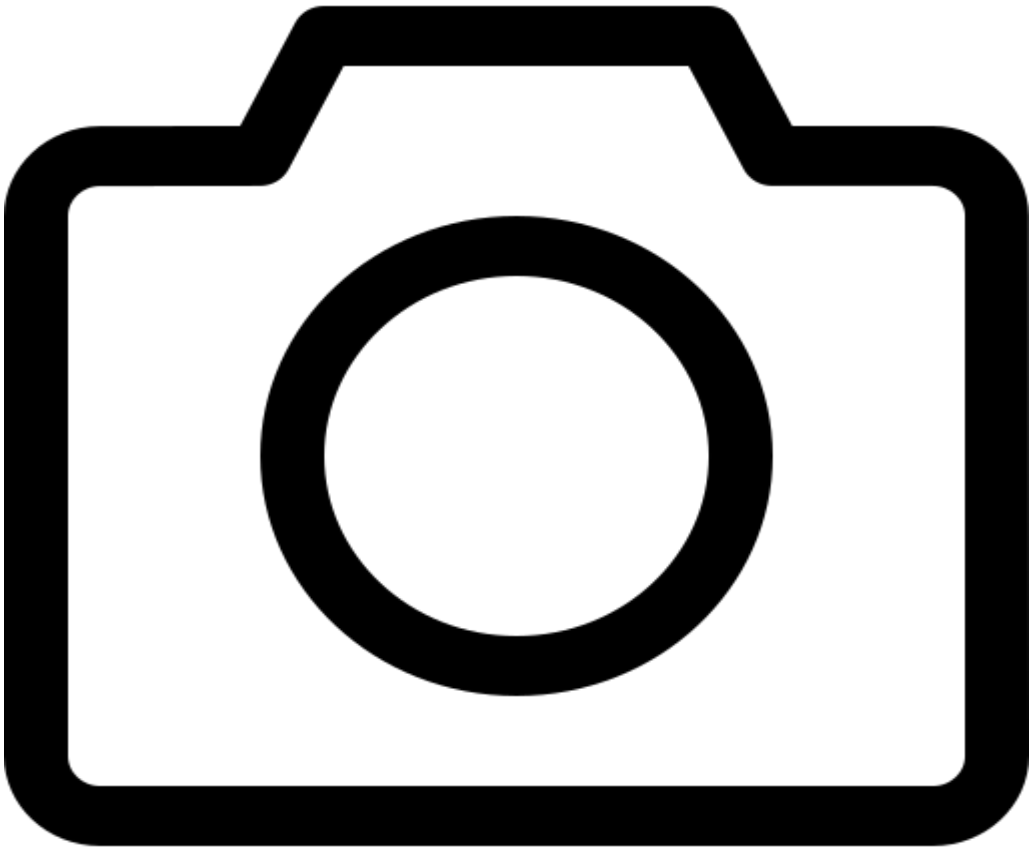
- **CREATE A TRANSLATE BUTTON**

```
translate = Button(root,text='Translate',bg='white',fg='black',font=('bold',10),activebackground='orange',command=translate)
translate.place(x=260,y=350)
```

- **LOGO OF GOOGLE TRANSLATE**

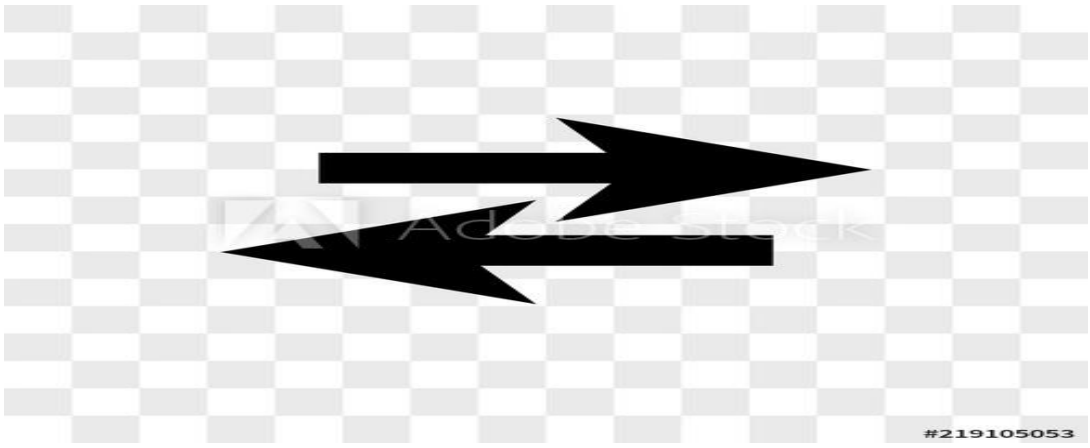
```
img = Image.open('logo.png')
img = img.resize((45,45),Image.ANTIALIAS)
img = img.save('image.ppm','ppm')
img = PhotoImage(file='image.ppm')
```

- **CAMERA PIC**



```
92  img3 = Image.open('camera.png')
93  img3 = img3.resize((30,30))
94  img3 = img3.save('image3.png','png')
95  img3 = PhotoImage(file='image3.png')
96
97  title = Label(root,text='MULTI LINGUAL',fg='black',bg='white',font=('bold',15))
98  title.place(x=220,y=30)
99
100 logo = Label(root,image=img,bg='white')
101 logo.place(x=175,y=23)
102
```

- **SWAP PIC**




```
86  img2 = Image.open('swap.png')
87  img2 = img2.resize((30,30))
88  img2 = img2.save('image2.ppm','ppm')
89  img2 = PhotoImage(file='image2.ppm')
90
```

PROGRESS

PART 1 -Completed

Our first step is to import ttk modules from tkinter library and Translator, LANGUAGES modules from googletrans library.

PART 2- Completed

We use tkinter library to create a window where we'll enter the text which we want to convert into target text.

- **Tk()** initialized tkinter which means window created
- **geometry()** set the width and height of the window
- **resizable(0,0)** set the fixed size of the window
- **bg** = '' use to set the background color
- **itle()** used to set the title of the window
- **Label()** widget use to display one or more than one line of text that users aren't able to modify.
    - **root** is the name which we refer to our window
    - **text** which we display on the label
    - **font** in which the text is written
    - **pack** organized widget in block

PART 3- Pending

Our next step is to create an input-output text widget

PART 4- Pending

Define Combobox to select the language.

PART 5-Completed

Define Translate function-The Translate function will translate the message and give the output.

- **src** gets the language selected as input text language
- **dest** gets the language select to translate
- **text** gets the input text entered by the user.”1.0″ means that the input should be read from zero characters to line one
- The **END** part **means** to read the text until the end is reached
- translator = Translator() used to create a Translator class object
- **Output_text.delete(1.0, END)** delete all the text from line one to end
- **Output_text.insert (END, translated.text)** will insert the translated text in Output_text

PART 6-Completed

Create translate button-When we click on the Translate button it will call the translate function

Button() widget used to display button on our window

- **command** is called when we click the button
- **activebackground** sets the background color to use when the button is active

root.mainloop() is a method that executes when we want to run our program.

FUTURE SCOPE

In this advanced age, geographical boundaries are fast becoming history. The online medium is closing down the sections of society. Thanks to the emergence of India, Japan and China as superpowers, the English language is also losing its strong hold. In this scenario, the jobs of translators and interpreters are considered as a lucrative career option by large number of people.

The appearance of new language centers significantly depict that there is no shortage of economic opportunities for a prominent translation company in Delhi and those who desire to take up interpretation and translation as their profession. Russian, Arabic, Japanese and Chinese translators and interpreters are nowadays highly in demand.
Today, foreign languages become a real asset for anyone who knows how to master them. With the internationalization of companies, companies are looking for more and more people who speak one or more languages.

The priority remains English. All other foreign languages are only optional. You can be brought to work in Germany, without speaking a word of German, as long as you know how to deal with the language of Shakespeare. The other languages will be able to prove to be an asset, according to the proposed post. If a company sells products in China, and you master Mandarin, your profile will grab their attention. And you will be even more likely to be offered the job if you have a good knowledge of the local culture. Moreover, English is a very spoken language, companies are not really surprised to have candidates who know how to speak fluently English; you will make the difference if you speak another language.

For information, the three most commonly used languages in the world are: Mandarin, Spanish and English. French is only in twelfth place!

So do not hesitate to indicate your language level in your CV. Even if a language that you speak will not be essential for your future work, indicating it will show your intellectual aptitude and openness. Be careful, however, not to exaggerate: never pretend that you have a certain level in a language, if you do not have it! The company will quickly realize if you speak a language fluently, or not .