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**Assignment No#2**

**English to Urdu Translation Software**

Our English to Urdu Translation Software leverages cutting-edge transformer models to deliver accurate and efficient translations. Powered by the Hugging Face Transformers library and PyTorch, this software provides seamless translation capabilities for various applications, including personal communication, educational purposes, and professional needs.

**Key Features:**

* **High-Quality Translations**: Utilizes the MarianMT model, ensuring precise and context-aware translations.
* **User-Friendly**: Easy to set up and use, with straightforward installation steps and minimal prerequisites.
* **Open-Source**: Built on trusted open-source libraries, ensuring transparency and flexibility for customization.
* **Scalability**: Capable of handling both small and large translation tasks, making it suitable for diverse use cases.

**Installation:**

1. **Install Python**: Ensure Python is installed on your computer.
2. **Install Transformers Library**: Use pip install transformers to install the necessary library.
3. **Install PyTorch**: Use pip install torch to install PyTorch, a crucial dependency for the software.

**How It Works:**

1. **Load the Model and Tokenizer**: The software loads the MarianMT model and tokenizer from Hugging Face’s model hub.
2. **Tokenize Input Text**: The input text is tokenized using the MarianTokenizer.
3. **Generate Translation**: The model generates the translation for the tokenized text.
4. **Decode Translated Text**: The translated text is decoded and outputted for the user.

**Example Usage:**

python

from transformers import MarianMTModel, MarianTokenizer

model\_name = 'Helsinki-NLP/opus-mt-en-ur'

tokenizer = MarianTokenizer.from\_pretrained(model\_name)

model = MarianMTModel.from\_pretrained(model\_name)

def translate\_to\_urdu(text):

tokens = tokenizer.encode(text, return\_tensors='pt')

translated = model.generate(tokens)

translated\_text = tokenizer.decode(translated[0], skip\_special\_tokens=True)

return translated\_text

text\_to\_translate = "Hello, how are you?"

urdu\_translation = translate\_to\_urdu(text\_to\_translate)

print(f'Translation: {urdu\_translation}')

Whether you need to translate documents, chat with Urdu-speaking friends, or explore Urdu literature, our translation software is your reliable companion.