User Documentation

# Introduction:

This document provides an overview of the Multi-Language Multi-Aspect Review Sentiment Analysis project. The goal of this project is to analyze customer reviews for different aspects and to determine the sentiment associated with each aspect. The project supports multiple languages, making it suitable for a global audience.

# Getting started:

To use the Multi-Language Multi-Aspect Review Sentiment Analysis project, you need to have the following software and hardware requirements:

* Python 3.9
* A recent version of TensorFlow or PyTorch
* A GPU or a high-performance CPU (if training the model on large datasets)

Once you have the required software and hardware, you can start using the Multi-Language Multi-Aspect Review Sentiment Analysis project by following these steps:

* Clone or download the source code from the project repository.
* Install the required dependencies using pip or conda.
* Prepare your input data by converting it into the appropriate format. The input data should contain customer reviews and the corresponding aspect and sentiment labels.
* Train the model using your input data by running the training script.
* Evaluate the model using the test data by running the evaluation script.
* Use the trained model to perform sentiment analysis on new customer reviews by running the prediction script.

# Data Format & Assumptions:

We assume that input data will be in the form of a CSV file, where each row represents a customer review and the columns represent the review text, aspect, and sentiment labels. The aspect and sentiment labels should be in the form of numerical values, with 0 representing negative sentiment, 1 representing neutral sentiment, and 2 representing positive sentiment. In short, we will need **Labeled data, with Aspects clearly mentioned**.

Example:

The treatment was good, but the staff was behaving rudely. #good, required

I really liked this. #Bad, not useful

Note: data will change the working Pipeline. Ahead mentioned approach is based on the above assumptions.

Sample CSV file: [Sample.csv](https://drive.google.com/file/d/16X16n4lXG9totiEKnnFLBGuuBo_18oqe/view?usp=sharing)

# Model Training:

The Multi-Language Multi-Aspect Review Sentiment Analysis project uses deep learning techniques such as convolutional neural networks (CNNs), recurrent neural networks (RNNs), and transformers to perform sentiment analysis. During the training phase, the model is optimized to minimize a loss function that measures the difference between the predicted sentiment and the true sentiment for each aspect. The model is trained using a supervised learning approach, where the model is fed labeled text data and the parameters are updated using an optimizer such as Adam.

# Model Evaluation:

Once the model has been trained, it can be evaluated using metrics such as accuracy, precision, recall, and F1 score. The evaluation script provides a detailed report of the model performance, including confusion matrices and plots.

# Model Deployment:

The trained model can be deployed for sentiment analysis on new customer reviews by running the prediction script. The prediction script inputs the customer review text and outputs the sentiment prediction for each aspect in the form of numerical values.

# Conclusion:

The Multi-Language Multi-Aspect Review Sentiment Analysis project provides a powerful tool for analyzing customer reviews and determining the sentiment associated with different aspects. With support for multiple languages and a flexible architecture that can be adapted to different use cases, this project is a valuable resource for businesses and organizations looking to understand their customers' opinions and experiences.