

Configuration Manual

MSc Research Project
Data Analytics

Joyal Johnson
Student ID: X22170936

School of Computing
National College of Ireland

Supervisor: Harshani Nagahamulla

National College of Ireland
MSc Project Submission Sheet
School of Computing



Student Name: Joyal Johnson
Student ID: X22170936
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Configuration Manual

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Student ID:x22170936

1 Introduction

The hardware and software specifications required for the project "The Impact of AI-Powered Technologies on Customer Satisfaction and Operational Efficiency in the Hospitality Industry" are all included in the configuration manual. It provides the methods and instalments required for the thesis as well as instructions on how to easily run algorithms such as various machine learning and deep learning models. It facilitates the user's evaluation and trouble-free use of the programs.

2 Hardware Configuration

Device specification

Device name DESKTOP-IDRROBP
Processor Intel(R) Core(TM) i3-7020U CPU @ 2.30GHz 2.30 GHz
Installed RAM 4.00 GB
Device ID 778B0EE2-8E1C-4D4B-BEA2-1551848AF33C
Product ID 00327-70000-00001-AA312
System type 64-bit operating system, x64-based processor
Pen and touch No pen or touch input is available for this display

Windows specification

Edition Windows 10 Home Single Language
Version 22H2
Installed on 5/18/2022
OS build 19045.3693
Experience Windows Feature Experience Pack 1000.19053.1000.0

3 Design Configuration

This section discusses the system requirements that were utilized to implement the project. As you can see, Google Collab is used to code because my system is outdated. Being aware of the system before acting is beneficial.

3.1 Google Collab pro Specification:

Memory: 256 GB
RAM: 51 GB
Runtime Types: CPUs, GPUs, and. TPUs
Accelerator: GPU

3.2 Software requirements:

- 1) Google Collab
- 2) Jupiter Notebook
- 3) Python 3

These are the necessary applications required for performing this job without difficulty.

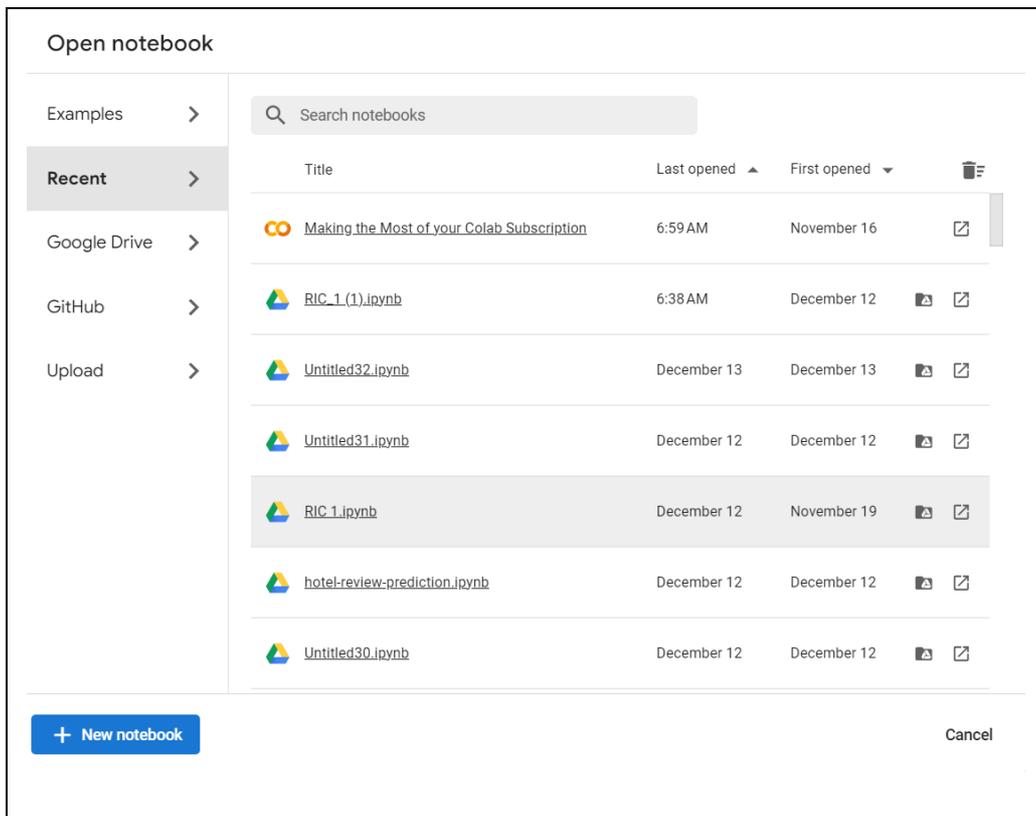
4 Data Collection

This project's dataset Named "Hotel_Reviews" was gathered via the open-source Kaggle platform. "<https://www.kaggle.com/datasets/jiashenliu/515k-hotel-reviews-data-in-europe>" is the URL provided below for the dataset. Because the dataset is in the public domain, anybody can use it without restriction.

5 Data Acquisition and Evaluation

5.1 How is Google Collab operated?

Launch Chrome, type in "google collab," and select the first result that shows up on the screen. Next, register for a Google Collab account and launch a notebook. Use the provided URL to access Google Collab. "https://colab.research.google.com/?utm_source=scs-index". After that, users can register for an account; if they already have one, it will appear as in the image below. Press the blue "new notebook" button located in the lower left corner.



5.2 Package Dependencies and Data Acquisition

5.2.1 Package installation

```
40] pip install tensorflow_text
[48] !pip install plotly
[81] pip install scikit-learn
```

Fig 1. Packages installation

The fact that many of the packages are already pre-installed is Google Collab's primary benefit. All we have to do is execute the code and call the function. Here, "tensorflow_text, plotly, and scikit_learn" are installed for various functions, including graph plotting and the creation of machine learning and deep learning models. Some of the other libraries are

```
[1] import warnings
warnings.filterwarnings("ignore")

import pandas as pd
pd.set_option("display.max_columns", None)
import numpy as np
import matplotlib.pyplot as plt
%matplotlib inline
import seaborn as sns
import folium
from wordcloud import WordCloud

import nltk
nltk.download('punkt')
nltk.download('wordnet')
nltk.download('stopwords')
from nltk.corpus import stopwords
stop_words = stopwords.words('english')
from nltk.tokenize import word_tokenize
from nltk.stem.wordnet import WordNetLemmatizer
lemmatizer = WordNetLemmatizer()
from ast import literal_eval

[nltk_data] Downloading package punkt to /root/nltk_data...
[nltk_data] Unzipping tokenizers/punkt.zip.
[nltk_data] Downloading package wordnet to /root/nltk_data...
[nltk_data] Downloading package stopwords to /root/nltk_data...
[nltk_data] Unzipping corpora/stopwords.zip.
```

```

import numpy as np # linear algebra
import pandas as pd # data processing, CSV file I/O (e.g. pd.read_csv)
import matplotlib
import matplotlib.patches as mpatches
from sklearn.feature_extraction.text import TfidfVectorizer, CountVectorizer
from sklearn.decomposition import TruncatedSVD
from tqdm import tqdm

import nltk
from nltk import word_tokenize
from nltk.corpus import stopwords
from sklearn.linear_model import LogisticRegression
from sklearn.metrics import log_loss, roc_auc_score, accuracy_score
import xgboost as xgb

from tensorflow.keras.models import Sequential
from tensorflow.keras.layers import Dense, Dropout, LSTM, Bidirectional, Activation, GRU, BatchNormalization
from tensorflow.keras.layers import GlobalMaxPooling1D, Conv1D, MaxPooling1D, Flatten, Bidirectional, SpatialDropout1D
from tensorflow.keras.optimizers import Adam
import tensorflow as tf
import tensorflow_hub as hub
import tensorflow_text

nltk.download('stopwords')
stop_words = stopwords.words('english')

```

[nltk_data] Downloading package stopwords to /root/nltk_data...
[nltk_data] Package stopwords is already up-to-date!

Here, we're importing a variety of libraries, like warning to enhance output cleanliness, matplotlib for visualizations, NLTK (Natural Language Toolkit) for natural language processing on pandas, numpy for data processing, and other libraries for text vectorization, logistic regression, dimensionality retrieval, and other uses.

5.2.2 Data calling and pre-processing

```

df = pd.read_csv(r"/content/Hotel_Reviews.csv")
df.head()

[ ] df.shape

Data Preprocessing

[ ] df.isnull().sum()

[ ] df.dropna(inplace=True,axis=0)

[ ] df.isna().sum()

[ ] print(df['Hotel_Name'].unique().tolist())

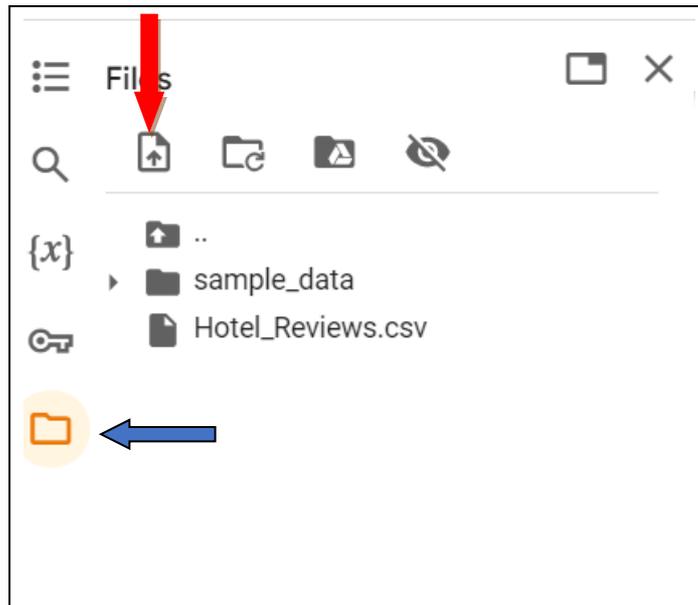
[ ] print(len(df['Hotel_Name'].unique().tolist()))
print(df['Reviewer_Nationality'].unique().tolist())

[ ] print(len(df['Reviewer_Nationality'].unique().tolist()))

```

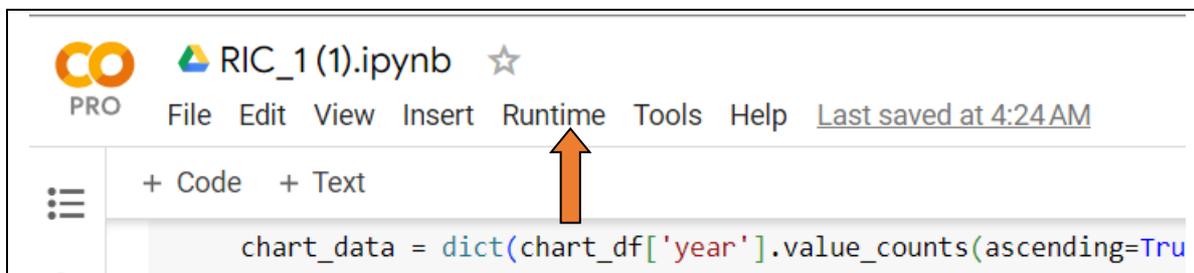
Fig.2

Here in the above figure 1st two line of codes is for calling the dataset and the rest of them is for cleaning the dataset for further steps.



The instruction for uploading a dataset to Collab is displayed in the above graphic. The files are located on the upper left corner of the notepad and are indicated by a blue arrow. Click on them first. Next, upload the dataset (highlighted in red). Once these two stages are completed, we can call the dataset from collab using the 1st two lines of figure 2.

5.2.3 Execution of the code



Once the dataset has been imported into the Collab notebook as previously explained, the given Python code may be executed with a single click by choosing the runtime button from the main menu. Once the dataset has been properly imported, choose Runtime and then Run All. Also, you may use the keys like Ctrl+ Enter to work on a cell by cell basis.

6 Conclusion

To ensure a successful execution and desired outcome, you must complete all of the aforementioned tasks, including importing the library. Because it is a cloud-based system(M. Canesche, L. Bragança, O. P. V. Neto, J. A. Nacif and R. Ferreira,2021), it will operate quickly and easily.

7 Reference

M. Canesche, L. Bragança, O. P. V. Neto, J. A. Nacif and R. Ferreira, "Google Colab CAD4U: Hands-On Cloud Laboratories for Digital Design," 2021 IEEE International Symposium on Circuits and Systems (ISCAS), Daegu, Korea, 2021, pp. 1-5, doi: 10.1109/ISCAS51556.2021.9401151.