LIMEObjectToASCII

September 15, 2025

1 Converting LIME Explanation Object into ASCII Art for Easier Reading in CSV files

[2]:
```
!pip install lime
```

```
Collecting lime
  Downloading lime-0.2.0.1.tar.gz (275 kB)
                             0.0/275.7
kB ? eta -:--:--

266.2/275.7 kB 8.9 MB/s eta 0:00:01
                       275.7/275.7 kB
6.2 MB/s eta 0:00:00
  Preparing metadata (setup.py) … done
Requirement already satisfied: matplotlib in /usr/local/lib/python3.12/dist-
packages (from lime) (3.10.0)
Requirement already satisfied: numpy in /usr/local/lib/python3.12/dist-packages
(from lime) (2.0.2)
Requirement already satisfied: scipy in /usr/local/lib/python3.12/dist-packages
(from lime) (1.16.1)
Requirement already satisfied: tqdm in /usr/local/lib/python3.12/dist-packages
(from lime) (4.67.1)
Requirement already satisfied: scikit-learn>=0.18 in
/usr/local/lib/python3.12/dist-packages (from lime) (1.6.1)
Requirement already satisfied: scikit-image>=0.12 in
/usr/local/lib/python3.12/dist-packages (from lime) (0.25.2)
Requirement already satisfied: networkx>=3.0 in /usr/local/lib/python3.12/dist-
packages (from scikit-image>=0.12->lime) (3.5)
Requirement already satisfied: pillow>=10.1 in /usr/local/lib/python3.12/dist-
packages (from scikit-image>=0.12->lime) (11.3.0)
Requirement already satisfied: imageio!=2.35.0,>=2.33 in
/usr/local/lib/python3.12/dist-packages (from scikit-image>=0.12->lime) (2.37.0)
Requirement already satisfied: tifffile>=2022.8.12 in
/usr/local/lib/python3.12/dist-packages (from scikit-image>=0.12->lime)
(2025.8.28)
Requirement already satisfied: packaging>=21 in /usr/local/lib/python3.12/dist-
packages (from scikit-image>=0.12->lime) (25.0)
```

```
Requirement already satisfied: lazy-loader>=0.4 in
/usr/local/lib/python3.12/dist-packages (from scikit-image>=0.12->lime) (0.4)
Requirement already satisfied: joblib>=1.2.0 in /usr/local/lib/python3.12/dist-
packages (from scikit-learn>=0.18->lime) (1.5.2)
Requirement already satisfied: threadpoolctl>=3.1.0 in
/usr/local/lib/python3.12/dist-packages (from scikit-learn>=0.18->lime) (3.6.0)
Requirement already satisfied: contourpy>=1.0.1 in
/usr/local/lib/python3.12/dist-packages (from matplotlib->lime) (1.3.3)
Requirement already satisfied: cycler>=0.10 in /usr/local/lib/python3.12/dist-
packages (from matplotlib->lime) (0.12.1)
Requirement already satisfied: fonttools>=4.22.0 in
/usr/local/lib/python3.12/dist-packages (from matplotlib->lime) (4.59.2)
Requirement already satisfied: kiwisolver>=1.3.1 in
/usr/local/lib/python3.12/dist-packages (from matplotlib->lime) (1.4.9)
Requirement already satisfied: pyparsing>=2.3.1 in
/usr/local/lib/python3.12/dist-packages (from matplotlib->lime) (3.2.3)
Requirement already satisfied: python-dateutil>=2.7 in
/usr/local/lib/python3.12/dist-packages (from matplotlib->lime) (2.9.0.post0)
Requirement already satisfied: six>=1.5 in /usr/local/lib/python3.12/dist-
packages (from python-dateutil>=2.7->matplotlib->lime) (1.17.0)
Building wheels for collected packages: lime
  Building wheel for lime (setup.py) … done
  Created wheel for lime: filename=lime-0.2.0.1-py3-none-any.whl size=283834
sha256=bc1278daf2c87ca96b7703eb0d214a3866a71245d97f1008feaf8ffe8f040355
  Stored in directory: /root/.cache/pip/wheels/e7/5d/0e/4b4fff9a47468fed5633211f
b3b76d1db43fe806a17fb7486a
Successfully built lime
Installing collected packages: lime
Successfully installed lime-0.2.0.1
```

[3]:
```
import re
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
from lime import lime_text
```

2 Read Pickle File

[4]:
```
df_lime_explanations = pd.read_pickle("lime_resultsV5.pkl")
```

[5]:
```
df_lime_explanations.head()
```

[5]:

	id	text	label	\
0	411	Dekat dengan hotel saya menginap, hanya ditemp…	positive	
1	729	Iya benar, dia sedang jaga warung.	neutral	
2	373	Kangkungnya lumayan tapi kepiting saus padangn…	negative	

```
3  262  Bertempat di braga city walk yang satu gedung …  positive
4  177  Gianyar terima bantuan sosial 2018 sebesar rp …   neutral

                                          preprocessed  \
0  dekat dengan hotel saya inap hanya tempuh jala…
1                    iya benar dia sedang jaga warung
2  kangkung lumayan tapi kepiting saus padang kec…
3  tempat di braga city walk yang satu gedung den…
4        gianyar terima bantu sosial besar rp miliar

                                          lime_results
0  <lime.explanation.Explanation object at 0x7a3f…
1  <lime.explanation.Explanation object at 0x7a3f…
2  <lime.explanation.Explanation object at 0x7a3f…
3  <lime.explanation.Explanation object at 0x7a3f…
4  <lime.explanation.Explanation object at 0x7a3f…
```

[6]:
```
df_lime_explanations.loc[0, "lime_results"].show_in_notebook()
```

```
<IPython.core.display.HTML object>
```

[9]:
```
lime_classes = df_lime_explanations.loc[0, "lime_results"].available_labels()
lime_classes
```

[9]:
```
[0, 1, 2]
```

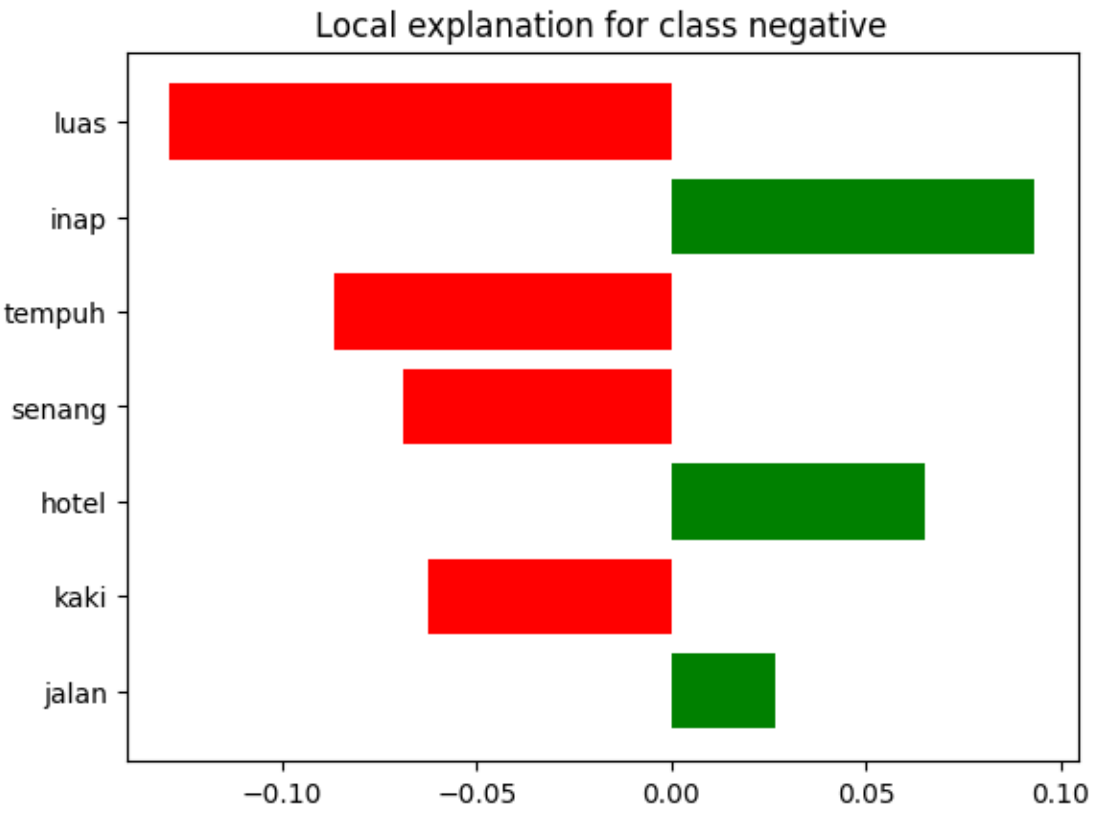
[10]:
```
# Get dict of model prediction probability results
def model_preds(limeobj):
  lime_proba = limeobj.predict_proba
  proba_dict = {cls: float(p) for cls, p in zip(limeobj.class_names,␣
 ↪lime_proba)}
  idx = np.argmax(lime_proba)
  predicted_class = lime_classes[idx]
  result = {}
  result["prediction"] = limeobj.class_names[predicted_class]
  result["probabilities"] = proba_dict

  return result
```

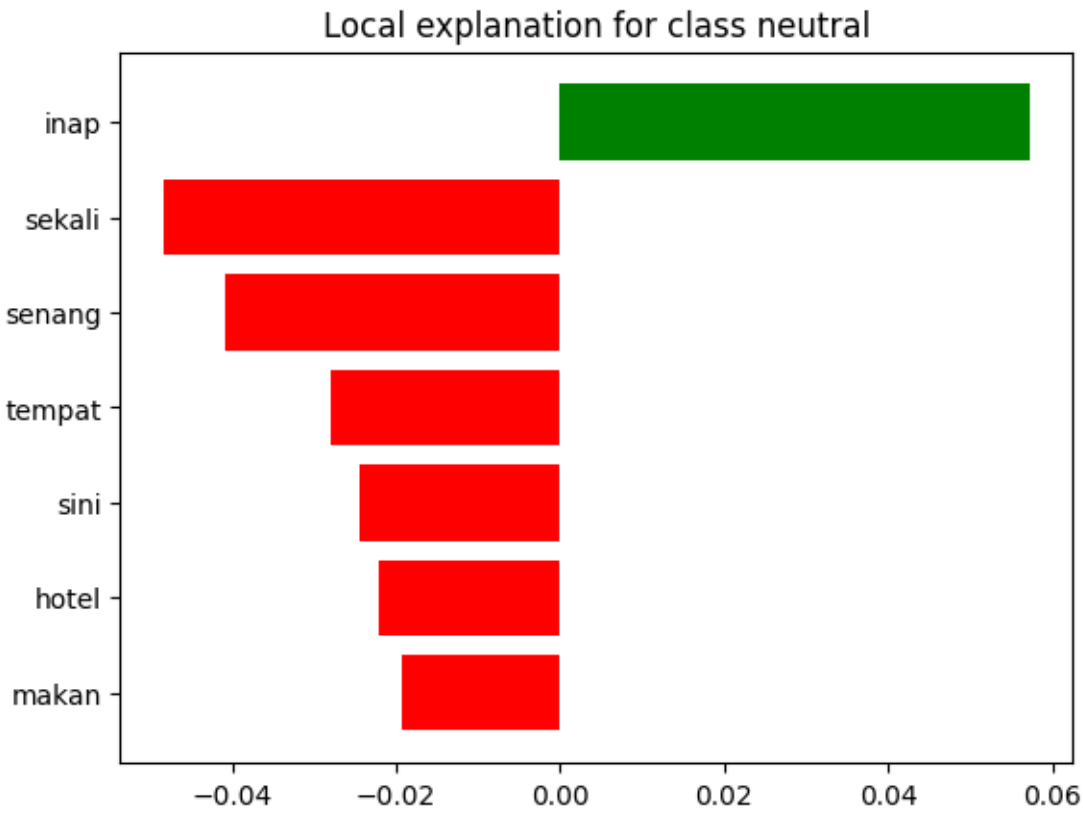
[11]:
```
preds = model_preds(df_lime_explanations.loc[0, "lime_results"])
print (preds)
```

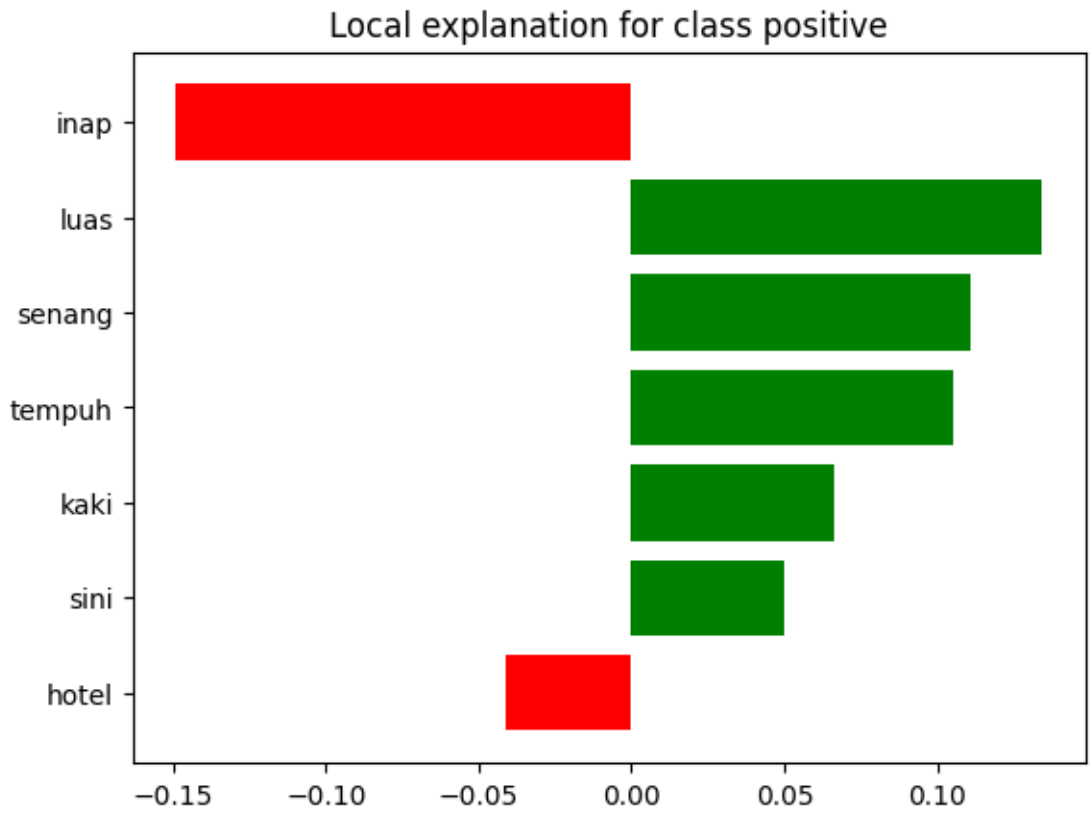
```
{'prediction': 'positive', 'probabilities': {'negative': 0.099061043832315,
'neutral': 0.033458052737104206, 'positive': 0.867480903430581}}
```

[11]:
```

```

[12]:
```
import matplotlib
%matplotlib inline
import matplotlib.pyplot as plt

plt.close('all')

for label in lime_classes:
    fig = df_lime_explanations.loc[0, "lime_results"].
 ↪as_pyplot_figure(label=label)
    fig.show()
```




Local explanation for class neutral
inap
sekali
senang
tempat
sini
hotel
makan
−0.04
−0.02
0.00
0.02
0.04
0.06



3 LIME Explanation Object to ASCII

[13]:
```
!pip install mpl_ascii==0.10.0
```

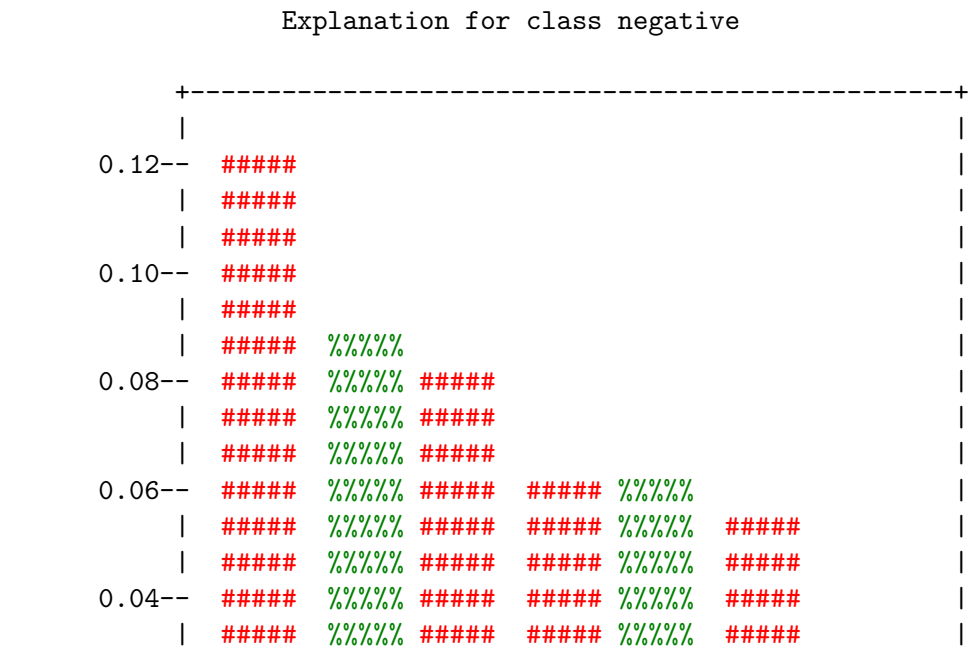
```
Collecting mpl_ascii==0.10.0
  Downloading mpl_ascii-0.10.0-py3-none-any.whl.metadata (6.1 kB)
Requirement already satisfied: matplotlib>=3.5.3 in
/usr/local/lib/python3.12/dist-packages (from mpl_ascii==0.10.0) (3.10.0)
Requirement already satisfied: rich>=13.7.1 in /usr/local/lib/python3.12/dist-
packages (from mpl_ascii==0.10.0) (13.9.4)
Requirement already satisfied: contourpy>=1.0.1 in
/usr/local/lib/python3.12/dist-packages (from
matplotlib>=3.5.3->mpl_ascii==0.10.0) (1.3.3)
Requirement already satisfied: cycler>=0.10 in /usr/local/lib/python3.12/dist-
packages (from matplotlib>=3.5.3->mpl_ascii==0.10.0) (0.12.1)
Requirement already satisfied: fonttools>=4.22.0 in
/usr/local/lib/python3.12/dist-packages (from
matplotlib>=3.5.3->mpl_ascii==0.10.0) (4.59.2)
Requirement already satisfied: kiwisolver>=1.3.1 in
/usr/local/lib/python3.12/dist-packages (from
```

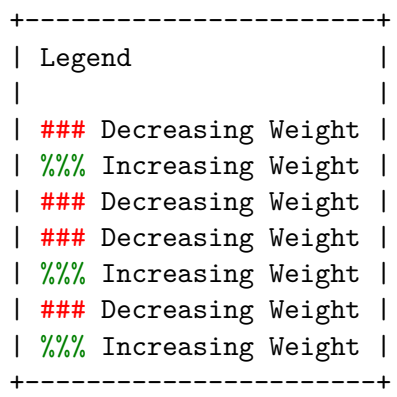
```
matplotlib>=3.5.3->mpl_ascii==0.10.0) (1.4.9)
Requirement already satisfied: numpy>=1.23 in /usr/local/lib/python3.12/dist-
packages (from matplotlib>=3.5.3->mpl_ascii==0.10.0) (2.0.2)
Requirement already satisfied: packaging>=20.0 in
/usr/local/lib/python3.12/dist-packages (from
matplotlib>=3.5.3->mpl_ascii==0.10.0) (25.0)
Requirement already satisfied: pillow>=8 in /usr/local/lib/python3.12/dist-
packages (from matplotlib>=3.5.3->mpl_ascii==0.10.0) (11.3.0)
Requirement already satisfied: pyparsing>=2.3.1 in
/usr/local/lib/python3.12/dist-packages (from
matplotlib>=3.5.3->mpl_ascii==0.10.0) (3.2.3)
Requirement already satisfied: python-dateutil>=2.7 in
/usr/local/lib/python3.12/dist-packages (from
matplotlib>=3.5.3->mpl_ascii==0.10.0) (2.9.0.post0)
Requirement already satisfied: markdown-it-py>=2.2.0 in
/usr/local/lib/python3.12/dist-packages (from rich>=13.7.1->mpl_ascii==0.10.0)
(4.0.0)
Requirement already satisfied: pygments<3.0.0,>=2.13.0 in
/usr/local/lib/python3.12/dist-packages (from rich>=13.7.1->mpl_ascii==0.10.0)
(2.19.2)
Requirement already satisfied: mdurl~=0.1 in /usr/local/lib/python3.12/dist-
packages (from markdown-it-py>=2.2.0->rich>=13.7.1->mpl_ascii==0.10.0) (0.1.2)
Requirement already satisfied: six>=1.5 in /usr/local/lib/python3.12/dist-
packages (from python-dateutil>=2.7->matplotlib>=3.5.3->mpl_ascii==0.10.0)
(1.17.0)
Downloading mpl_ascii-0.10.0-py3-none-any.whl (19 kB)
Installing collected packages: mpl_ascii
Successfully installed mpl_ascii-0.10.0
```

[14]:
```python
import matplotlib.pyplot as plt
import matplotlib as mpl
# %matplotlib module://mpl_ascii
mpl.use("module://mpl_ascii")

import matplotlib.pyplot as plt

import mpl_ascii

# Modified function to display negative values in bar chart
def lime_to_ascii(limeobj,label):
  plt.close('all')
  mpl_ascii.ENABLE_COLORS = True  # optional: simplifies out
  mpl_ascii.AXES_WIDTH =  50   # adjust width
  mpl_ascii.AXES_HEIGHT = 20   # adjust height
  exp = limeobj.as_list(label=label)

  vals = [x[1] for x in exp]
```

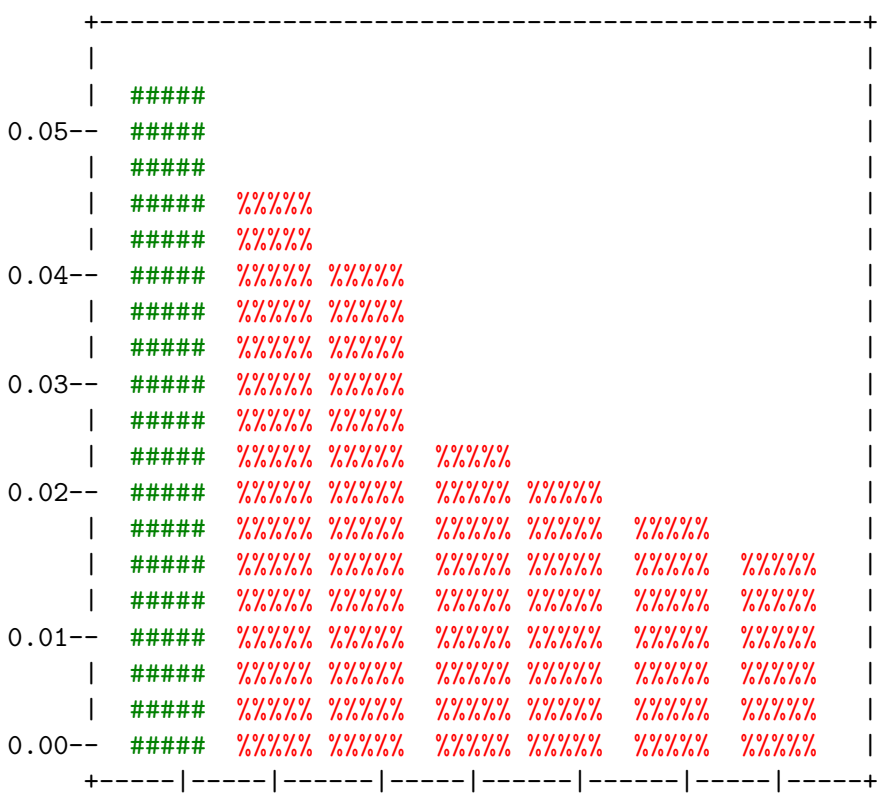
```
  abs_vals = [abs(x) for x in vals]
  colors = ['green' if x > 0 else 'red' for x in vals]
  names = [x[0] for x in exp]


  fig1, ax1 = plt.subplots()
  plt.ylim(0, max(abs_vals))

# Plot each bar individually
  for name, val,color in zip(names, vals, colors):
    if val > 0:
      ax1.bar(name, val, color=color, label = "Increasing Weight")
    else:
      val = abs(val)
      ax1.bar(name, val, color=color, label = "Decreasing Weight")

  title = 'Explanation for class %s' % limeobj.class_names[label]
  ax1.legend()
  ax1.set_title(title )


  return fig1
```

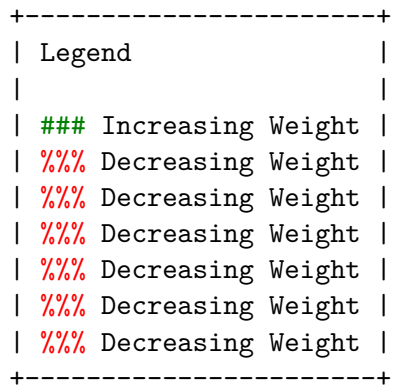
[15]:
```
# Example of custom function lime_to_ascii
for label in lime_classes:
    limeobj = df_lime_explanations.loc[0, "lime_results"]
    exp = lime_to_ascii(limeobj, label=label)
    exp.show()
```



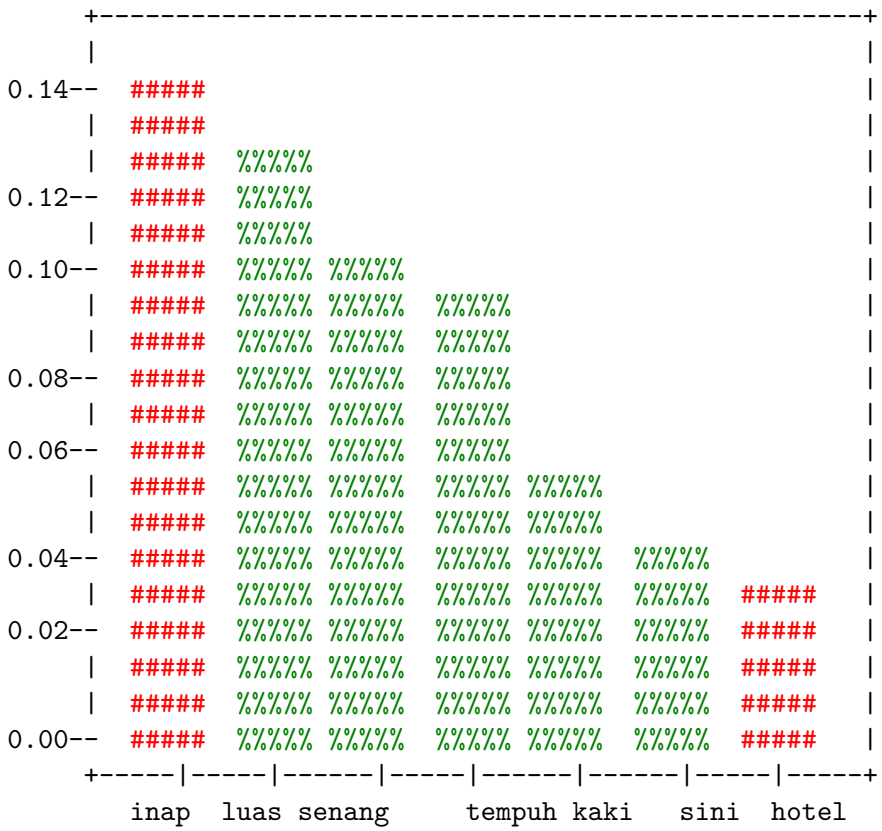


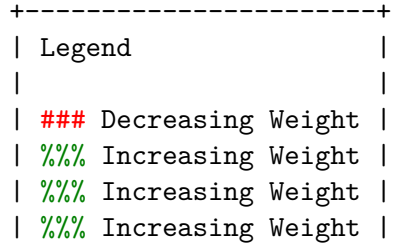
Explanation for class neutral





Explanation for class positive





```
| %%% Increasing Weight |
| %%% Increasing Weight |
| ### Decreasing Weight |
+-----------------------+
```

[15]:

[16]:
```
# Save Fig to .txt file then read the file
def ascii_to_row_value(fig):
  fig.savefig("myfigure.txt")
  with open("myfigure.txt", "r", encoding="utf-8") as f:
    text = f.read()
  return text
```

[17]:
```
# Get LIME object, convert to ASCII, then read the ASCII text
def lime_to_row_value(limeobj,label):
  fig = lime_to_ascii(limeobj, label=label)
  row_value = ascii_to_row_value(fig)
  return row_value
```

[18]:
```
df_lime_explanations['model_preds'] = df_lime_explanations['lime_results'].
 ↪apply(model_preds)
```

[19]:
```
df_lime_explanations['ascii_plot_negative'] =␣
 ↪df_lime_explanations['lime_results'].apply(lime_to_row_value, label=0)
df_lime_explanations['ascii_plot_neutral'] =␣
 ↪df_lime_explanations['lime_results'].apply(lime_to_row_value, label=1)
df_lime_explanations['ascii_plot_positive'] =␣
 ↪df_lime_explanations['lime_results'].apply(lime_to_row_value, label=2)
```

[20]:
```
df_lime_explanations.head()
```

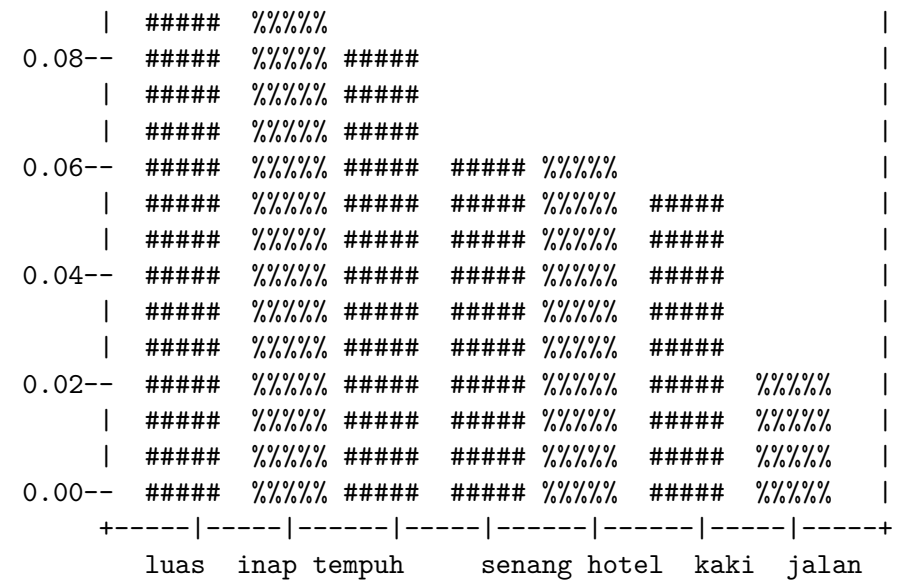
[20]:

	id	text	label	preprocessed
0	411	Dekat dengan hotel saya menginap, hanya ditemp…	positive	dekat dengan hotel saya inap hanya tempuh jala…
1	729	Iya benar, dia sedang jaga warung.	neutral	iya benar dia sedang jaga warung
2	373	Kangkungnya lumayan tapi kepiting saus padangn…	negative	kangkung lumayan tapi kepiting saus padang kec…
3	262	Bertempat di braga city walk yang satu gedung …	positive	tempat di braga city walk yang satu gedung den…
4	177	Gianyar terima bantuan sosial 2018 sebesar rp …	neutral	gianyar terima bantu sosial besar rp miliar

```
                                        lime_results  \
0  <lime.explanation.Explanation object at 0x7a3f…
1  <lime.explanation.Explanation object at 0x7a3f…
2  <lime.explanation.Explanation object at 0x7a3f…
3  <lime.explanation.Explanation object at 0x7a3f…
4  <lime.explanation.Explanation object at 0x7a3f…

                                         model_preds  \
0  {'prediction': 'positive', 'probabilities': {'…
1  {'prediction': 'neutral', 'probabilities': {'n…
2  {'prediction': 'negative', 'probabilities': {'…
3  {'prediction': 'positive', 'probabilities': {'…
4  {'prediction': 'neutral', 'probabilities': {'n…

                                ascii_plot_negative  \
0               Explanation for class negative  …
1                Explanation for class negative …
2               Explanation for class negative  …
3               Explanation for class negative  …
4               Explanation for class negative  …

                                 ascii_plot_neutral  \
0                Explanation for class neutral  …
1                Explanation for class neutral  …
2                Explanation for class neutral  …
3                 Explanation for class neutral …
4                Explanation for class neutral  …

                                ascii_plot_positive
0               Explanation for class positive  …
1               Explanation for class positive  …
2               Explanation for class positive  …
3               Explanation for class positive  …
4               Explanation for class positive  …
```

[21]:
```
value = df_lime_explanations.loc[0, "ascii_plot_negative"]
print(value)
```

```
             Explanation for class negative


      +-------------------------------------------------+
      |                                                 |
 0.12--  #####                                          |
      |  #####                                          |
      |  #####                                          |
 0.10--  #####                                          |
      |  #####                                          |
```




```
+----------------------+
| Legend               |
|                      |
| ### Decreasing Weight |
| %%% Increasing Weight |
| ### Decreasing Weight |
| ### Decreasing Weight |
| %%% Increasing Weight |
| ### Decreasing Weight |
| %%% Increasing Weight |
+----------------------+
```

4 Save ASCII Result

[22]:
```
# Remove Pickle Column
df_copy = df_lime_explanations.copy()

df_copy = df_copy.drop(columns=["lime_results"])
```

[23]:
```
df_copy.head()
```

[23]:

	id	text	label	preprocessed
0	411	Dekat dengan hotel saya menginap, hanya ditemp…	positive	
1	729	Iya benar, dia sedang jaga warung.	neutral	
2	373	Kangkungnya lumayan tapi kepiting saus padangn…	negative	
3	262	Bertempat di braga city walk yang satu gedung …	positive	
4	177	Gianyar terima bantuan sosial 2018 sebesar rp …	neutral	

```
0  dekat dengan hotel saya inap hanya tempuh jala…
1                    iya benar dia sedang jaga warung
2  kangkung lumayan tapi kepiting saus padang kec…
3  tempat di braga city walk yang satu gedung den…
4        gianyar terima bantu sosial besar rp miliar

                                          model_preds  \
0  {'prediction': 'positive', 'probabilities': {'…
1  {'prediction': 'neutral', 'probabilities': {'n…
2  {'prediction': 'negative', 'probabilities': {'…
3  {'prediction': 'positive', 'probabilities': {'…
4  {'prediction': 'neutral', 'probabilities': {'n…

                                ascii_plot_negative  \
0               Explanation for class negative  …
1                Explanation for class negative …
2               Explanation for class negative  …
3               Explanation for class negative  …
4               Explanation for class negative  …

                                 ascii_plot_neutral  \
0                Explanation for class neutral  …
1                Explanation for class neutral  …
2                Explanation for class neutral  …
3                 Explanation for class neutral …
4                Explanation for class neutral  …

                                ascii_plot_positive
0               Explanation for class positive  …
1               Explanation for class positive  …
2               Explanation for class positive  …
3               Explanation for class positive  …
4               Explanation for class positive  …
```

[24]:
```
df_copy.to_csv("data_with_ascii_plot.csv", index=False, encoding="utf-8")
```

5 Read CSV with ASCII Plot

[25]:
```
df_ascii = pd.read_csv("data_with_ascii_plot.csv")
```

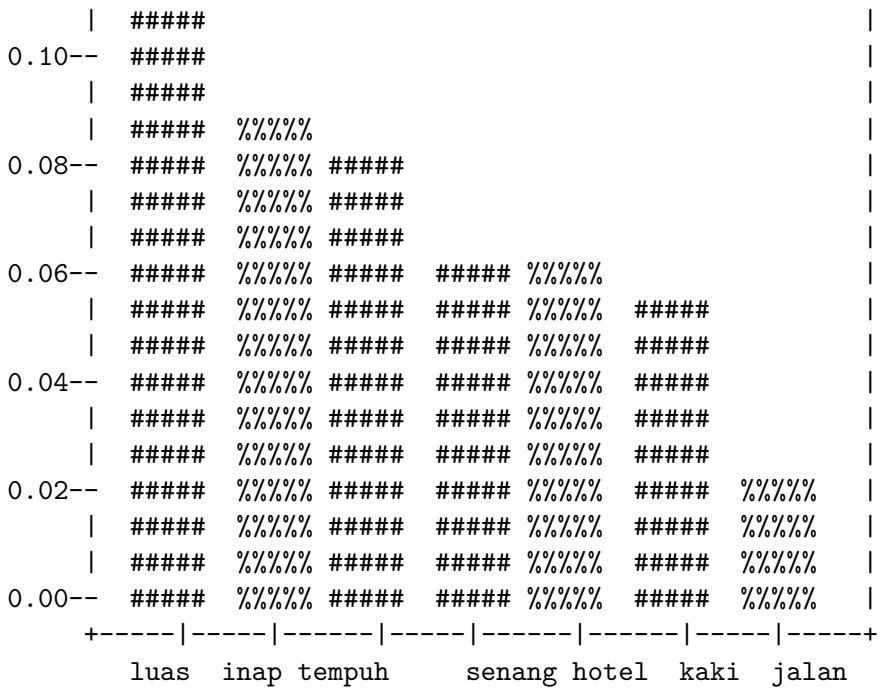
[26]:
```
df_ascii.head()
```

[26]:
```
    id                                               text     label  \
0  411  Dekat dengan hotel saya menginap, hanya ditemp…  positive
1  729                 Iya benar, dia sedang jaga warung.   neutral
2  373  Kangkungnya lumayan tapi kepiting saus padangn…  negative
```

```
3  262  Bertempat di braga city walk yang satu gedung …  positive
4  177  Gianyar terima bantuan sosial 2018 sebesar rp …   neutral

                                        preprocessed  \
0  dekat dengan hotel saya inap hanya tempuh jala…
1                    iya benar dia sedang jaga warung
2  kangkung lumayan tapi kepiting saus padang kec…
3  tempat di braga city walk yang satu gedung den…
4        gianyar terima bantu sosial besar rp miliar

                                         model_preds  \
0  {'prediction': 'positive', 'probabilities': {'…
1  {'prediction': 'neutral', 'probabilities': {'n…
2  {'prediction': 'negative', 'probabilities': {'…
3  {'prediction': 'positive', 'probabilities': {'…
4  {'prediction': 'neutral', 'probabilities': {'n…

                                ascii_plot_negative  \
0               Explanation for class negative  …
1                Explanation for class negative …
2               Explanation for class negative  …
3               Explanation for class negative  …
4               Explanation for class negative  …

                                 ascii_plot_neutral  \
0                Explanation for class neutral  …
1                Explanation for class neutral  …
2                Explanation for class neutral  …
3                 Explanation for class neutral …
4                Explanation for class neutral  …

                                ascii_plot_positive
0               Explanation for class positive  …
1               Explanation for class positive  …
2               Explanation for class positive  …
3               Explanation for class positive  …
4               Explanation for class positive  …
```

[27]:
```
value = df_ascii.loc[0, "ascii_plot_negative"]
print(value)
```

```
             Explanation for class negative

      +-------------------------------------------------+
      |                                                 |
 0.12--  #####                                          |
      |  #####                                          |
```




```
+-----------------------+
| Legend                |
|                       |
| ### Decreasing Weight |
| %%% Increasing Weight |
| ### Decreasing Weight |
| ### Decreasing Weight |
| %%% Increasing Weight |
| ### Decreasing Weight |
| %%% Increasing Weight |
+-----------------------+
```

[35]:
```
!apt-get install -y texlive-xetex texlive-fonts-recommended texlive-latex-extra␣
↪pandoc
!jupyter nbconvert --to pdf "LIMEObjectToASCII.ipynb"
```