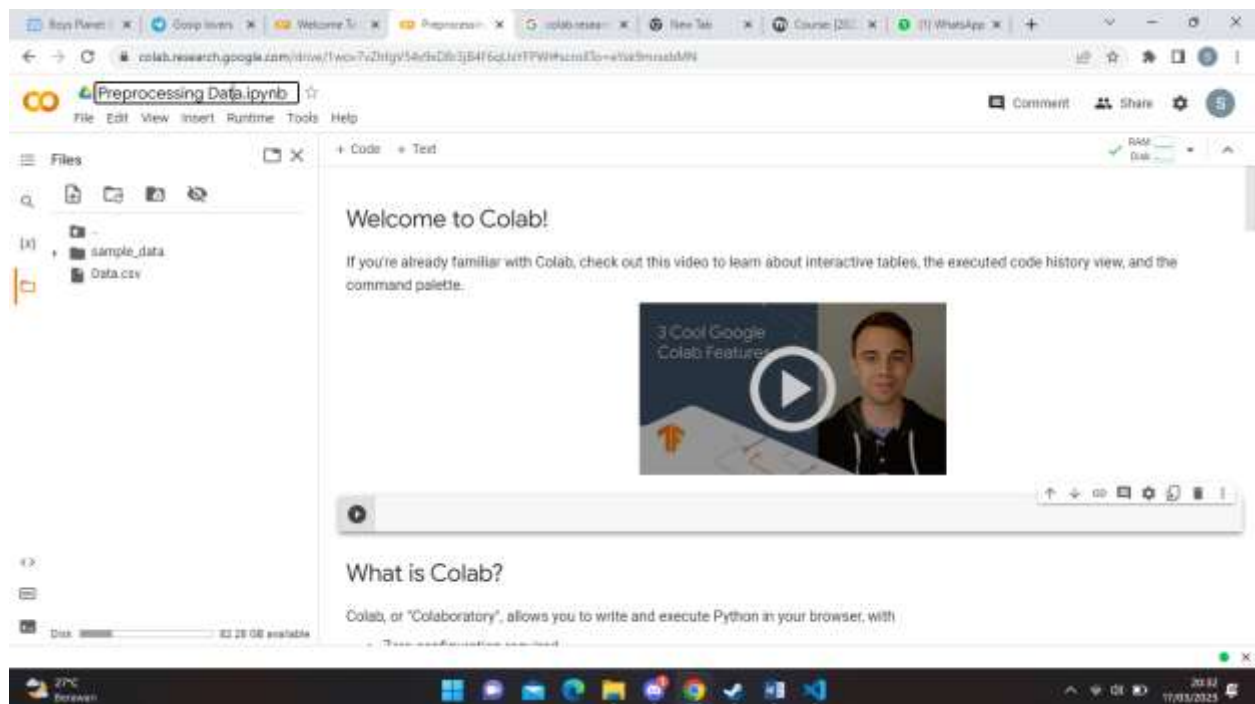
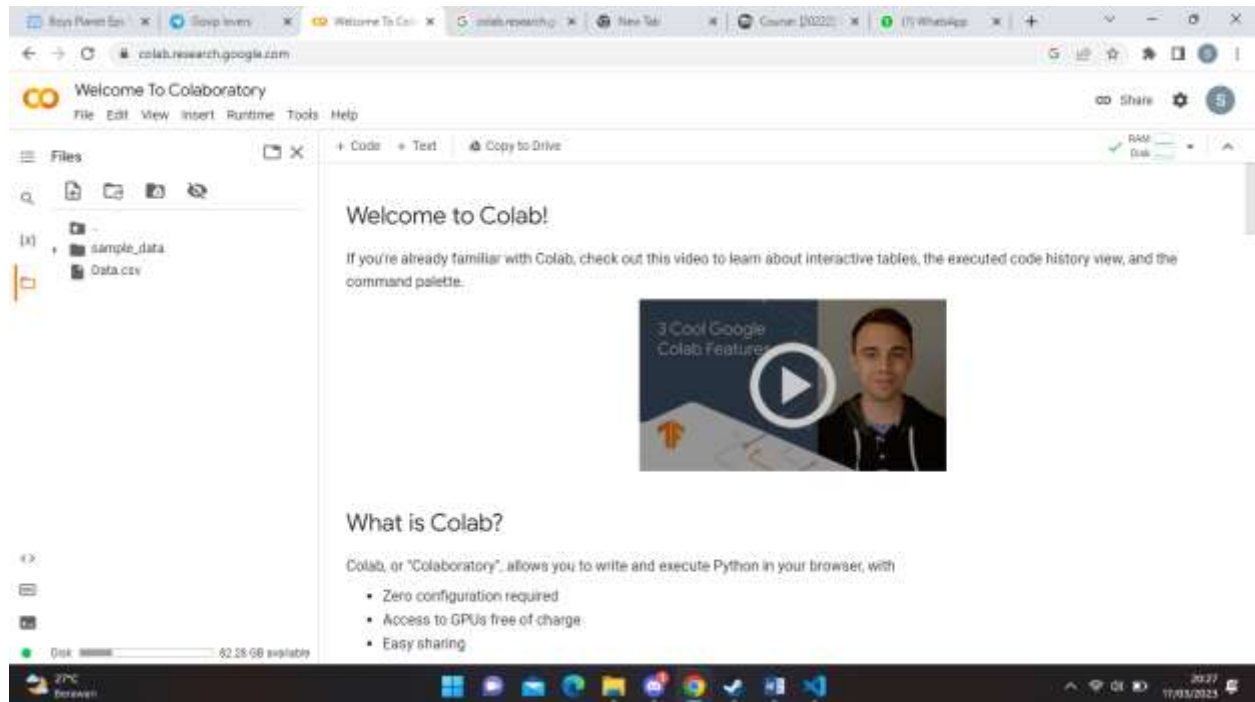


Nama : Shine Vardina Victoria Sudrajat

NIM : A11.2020.13189

Kelas : A11.4616



Preprocessing Data.ipynb

File Edit View Insert Runtime Tools Help Save

Files

- sample_data
- Data.csv

Welcome to Colab!

If you're already familiar with Colab, check out this video to learn about interactive tables, the executed code history view, and the command palette.

3 Cool Google Colab Features

```
import numpy as np
import matplotlib.pyplot as plt
import pandas as pd
```

What is Colab?

27°C
Battery

22.28 GB available

Preprocessing Data.ipynb

File Edit View Insert Runtime Tools Help All changes saved

Files

- sample_data
- Data.csv

Welcome to Colab!

If you're already familiar with Colab, check out this video to learn about interactive tables, the executed code history view, and the command palette.

3 Cool Google Colab Features

```
import numpy as np
import matplotlib.pyplot as plt
import pandas as pd
```

What is Colab?

27°C
Battery

22.28 GB available

completed at 6:37 PM

Preprocessing Data.ipynb


File Edit View Insert Runtime Tools Help All changes saved

Files

- sample_data
- Data.csv

Code

If you're already familiar with Colab, check out this video to learn about interactive tables, the executed code history view, and the command palette.



```
[1]: import numpy as np
import matplotlib.pyplot as plt
import pandas as pd
```

Numpy merupakan library python digunakan untuk komputasi matriks. Matplotlib merupakan library python untuk presentasi data berupa grafik atau plot.

completed at 8:37PM

Preprocessing Data.ipynb


File Edit View Insert Runtime Tools Help All changes saved

Files

- sample_data
- Data.csv

Code

If you're already familiar with Colab, check out this video to learn about interactive tables, the executed code history view, and the command palette.



```
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import matplotlib.pyplot as plt
import pandas as pd
```

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completed at 8:37PM

Preprocessing Data.ipynb


File Edit View Insert Runtime Tools Help

Files

- sample_data
- Data.csv

Code

If you're already familiar with Colab, check out this video to learn about interactive tables, the executed code history view, and the command palette.



```
[ ] import numpy as np
import matplotlib.pyplot as plt
import pandas as pd
```

Numpy merupakan library python digunakan untuk komputasi matriks. Matplotlib merupakan library python untuk presentasi data berupa grafik atau plot.

```
[ ] dataset = pd.read_csv('Data.csv')
x = dataset.iloc[:, :-1].values
y = dataset.iloc[:, -1].values
```

completed at 8:37 PM


Preprocessing Data.ipynb

File Edit View Insert Runtime Tools Help

Files

- sample_data
- Data.csv

Code



```
[5] import numpy as np
import matplotlib.pyplot as plt
import pandas as pd
```

Numpy merupakan library python digunakan untuk komputasi matriks. Matplotlib merupakan library python untuk presentasi data berupa grafik atau plot.

```
[ ] dataset = pd.read_csv('Data.csv')
x = dataset.iloc[:, :-1].values
y = dataset.iloc[:, -1].values
```

completed at 10:42 PM

Preprocessing Data.ipynb

File Edit View Insert Runtime Tools Help All changes saved

Files

- sample_data
- Data.csv

```
[5]: import numpy as np
import matplotlib.pyplot as plt
import pandas as pd
```

Numpy merupakan library python digunakan untuk komputasi matriks. Matplotlib merupakan library python untuk presentasi data berupa grafik atau plot.

```
[7]: dataset = pd.read_csv('Data.csv')
x = dataset.iloc[:, 1:-1].values
y = dataset.iloc[:, -1].values
```

```
print(x)
```

```
[ ]
```

What is Colab?

Colab, or "Colaboratory", allows you to write and execute Python in your browser, with

- Zero configuration required

completed at 10:42 PM

Preprocessing Data.ipynb

File Edit View Insert Runtime Tools Help All changes saved

Files

- sample_data
- Data.csv

```
[7]: dataset = pd.read_csv('Data.csv')
x = dataset.iloc[:, 1:-1].values
y = dataset.iloc[:, -1].values
```

```
print(x)
```

```
[["France" 44.0 72000.0]
["Spain" 27.0 48000.0]
["Germany" 30.0 54000.0]
["Spain" 38.0 61000.0]
["Germany" 40.0 nan]
["France" 35.0 50000.0]
["Spain" nan 52000.0]
["France" 48.0 70000.0]
["Germany" 50.0 85000.0]
["France" 27.0 67000.0]]
```

```
[ ]
```

What is Colab?

Colab, or "Colaboratory", allows you to write and execute Python in your browser, with

completed at 10:44 PM

Preprocessing Data.ipynb

File Edit View Insert Runtime Tools Help

Files

- sample_data
- Data.csv

Code

```
grafik atau plot.  
  
[7]: dataset = pd.read_csv('Data.csv')  
     x = dataset.iloc[:, 1:5].values  
     y = dataset.iloc[:, -1].values  
  
[8]: print(x)  
  
[[ 'France' 44.0 72000.0  
  'Spain' 27.0 48000.0  
  'Germany' 30.0 54000.0  
  'Spain' 38.0 61000.0  
  'Germany' 40.0 nan  
  'France' 35.0 58000.0  
  'Spain' nan 52000.0  
  'France' 48.0 79000.0  
  'Germany' 50.0 83000.0  
  'France' 27.0 67000.0]]  
  
print(y)  
  
[ ]
```

What is Colab?

completed at 10:44 PM

Preprocessing Data.ipynb

File Edit View Insert Runtime Tools Help [Unsaved changes since 10:45 PM](#)

Files

- sample_data
- Data.csv

Code

```
[8]: [[ 'France' 44.0 72000.0  
      'Spain' 27.0 48000.0  
      'Germany' 30.0 54000.0  
      'Spain' 38.0 61000.0  
      'Germany' 40.0 nan  
      'France' 35.0 58000.0  
      'Spain' nan 52000.0  
      'France' 48.0 79000.0  
      'Germany' 50.0 83000.0  
      'France' 27.0 67000.0]]  
  
print(y)  
  
['No' 'Yes' 'No' 'No' 'Yes' 'Yes' 'No' 'Yes' 'No' 'Yes']  
  
[ ]
```

What is Colab?

Colab, or "Colaboratory", allows you to write and execute Python in your browser, with

- Zero configuration required
- Access to GPUs free of charge
- Easy sharing

completed at 10:45 PM

Preprocessing Data.ipynb

File Edit View Insert Runtime Tools Help

Files

- sample_data
- Data.csv

```
[#] ['France' 35.0 18000.0]
     ['Spain' nan 12000.0]
     ['France' 40.0 70000.0]
     ['Germany' 50.0 83000.0]
     ['France' 37.0 67000.0]

[9]: print(y)

['No' 'Yes' 'No' 'No' 'Yes' 'Yes' 'No' 'Yes' 'No' 'Yes']
```

from sklearn.impute import SimpleImputer
imputer = SimpleImputer(missing_values=np.nan, strategy='mean')
imputer.fit(x[:, 1:3])
x[:, 1:3] = imputer.transform(x[:, 1:3])

Getting started

The document you are reading is not a static web page, but an interactive environment called a **Colab notebook** that lets you write and execute code.

For example, here is a **code cell** with a short Python script that computes a value, stores it in a variable, and prints the result:

```
seconds_in_a_day = 24 * 60 * 60
seconds_in_a_day
```

Preprocessing Data.ipynb

File Edit View Insert Runtime Tools Help

Files

- sample_data
- Data.csv

```
[#] ['France' 35.0 18000.0]
     ['Spain' nan 12000.0]
     ['France' 40.0 70000.0]
     ['Germany' 50.0 83000.0]
     ['France' 37.0 67000.0]

[9]: print(y)

['No' 'Yes' 'No' 'No' 'Yes' 'Yes' 'No' 'Yes' 'No' 'Yes']
```

from sklearn.impute import SimpleImputer
imputer = SimpleImputer(missing_values=np.nan, strategy='mean')
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The document you are reading is not a static web page, but an interactive environment called a **Colab notebook** that lets you write and execute code.

For example, here is a **code cell** with a short Python script that computes a value, stores it in a variable, and prints the result:

```
seconds_in_a_day = 24 * 60 * 60
seconds_in_a_day
```

completed at 10:55PM

Preprocessing Data.ipynb

File Edit View Insert Runtime Tools Help All changes saved

Files

- sample_data
- Data.csv

```
[9]: print(y)

["No" "Yes" "No" "No" "Yes" "Yes" "No" "Yes" "No" "Yes"]

[12]: from sklearn.impute import SimpleImputer
inputer = SimpleImputer(missing_values=np.nan, strategy='mean')
inputer.fit(x[:, 1:3])
x[:, 1:3] = inputer.transform(x[:, 1:3])

print(x)
```

To execute the code in the above cell, select it with a click and then either press the play button to the left of the code, or use the keyboard shortcut "Command/Ctrl+Enter". To edit the code, just click the cell and start editing.

Variables that you define in one cell can later be used in other cells:

```
[ ] seconds_in_a_week = 7 * seconds_in_a_day
seconds_in_a_week

604800
```

Colab notebooks allow you to combine **executable code** and **rich text** in a single document, along with **images**, **HTML**, **LaTeX** and more. When you create your own Colab notebooks, they are stored in your Google Drive account. You can easily share your Colab notebooks

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completed at 10:59PM

Preprocessing Data.ipynb

File Edit View Insert Runtime Tools Help All changes saved

Files

- sample_data
- Data.csv

```
[9]: print(y)

["No" "Yes" "No" "No" "Yes" "Yes" "No" "Yes" "No" "Yes"]

[12]: from sklearn.impute import SimpleImputer
inputer = SimpleImputer(missing_values=np.nan, strategy='mean')
inputer.fit(x[:, 1:3])
x[:, 1:3] = inputer.transform(x[:, 1:3])

print(x)
```

```
[["France" 44.0 72000.0]
["Spain" 27.0 40000.0]
["Germany" 30.0 54000.0]
["Spain" 38.0 62000.0]
["Germany" 40.0 83777.77777777778]
["France" 35.0 58000.0]
["Spain" 38.77777777777778 52000.0]
["France" 48.0 70000.0]
["Germany" 50.0 83000.0]
["France" 37.0 67000.0]]
```

To execute the code in the above cell, select it with a click and then either press the play button to the left of the code, or use the keyboard shortcut "Command/Ctrl+Enter". To edit the code, just click the cell and start editing.

Variables that you define in one cell can later be used in other cells:

27°C
completed at 11:00PM

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Preprocessing Data.ipynb

File Edit View Insert Runtime Tools Help

Comment Share

8

Files

- sample_data
- Data.csv

```
[13]: [{"Spain": 27.0, 40000.0}, {"Germany": 30.0, 54000.0}, {"Spain": 30.0, 61000.0}, {"Germany": 40.0, 63777.77777777778}, {"France": 35.0, 58000.0}, {"Spain": 38.77777777777778, 52000.0}, {"France": 48.0, 79000.0}, {"Germany": 50.0, 83000.0}, {"France": 37.0, 67000.0}]
```

```
from sklearn.compose import ColumnTransformer
from sklearn.preprocessing import OneHotEncoder
ct = ColumnTransformer(transformers=[('encoder', OneHotEncoder(), [0])], remainder='passthrough')
x = np.array(ct.fit_transform(x))
```

```
[ ] seconds_in_a_week = 7 * seconds_in_a_day
seconds_in_a_week
```

604800

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Borwein

completed at 11:10 PM

2/10
17/03/2023

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Preprocessing Data.ipynb

File Edit View Insert Runtime Tools Help All changes saved

Comment Share

8

Files

- sample_data
- Data.csv

```
[13]: [{"Spain": 27.0, 40000.0}, {"Germany": 30.0, 54000.0}, {"Spain": 30.0, 61000.0}, {"Germany": 40.0, 63777.77777777778}, {"France": 35.0, 58000.0}, {"Spain": 38.77777777777778, 52000.0}, {"France": 48.0, 79000.0}, {"Germany": 50.0, 83000.0}, {"France": 37.0, 67000.0}]
```

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```
[ ] seconds_in_a_week = 7 * seconds_in_a_day
seconds_in_a_week
```

604800

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Borwein

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Preprocessing Data.ipynb

File Edit View Insert Runtime Tools Help All changes saved

Files

- sample_data
- Data.csv

```
[13]: [{"Spain": 27.0, 40000.0},
      {"Germany": 30.0, 54000.0},
      {"Spain": 30.0, 61000.0},
      {"Germany": 40.0, 63777.77777777778},
      {"France": 35.0, 50000.0},
      {"Spain": 30.77777777777778, 52000.0},
      {"France": 40.0, 70000.0},
      {"Germany": 50.0, 83000.0},
      {"France": 37.0, 67000.0}]
```

```
[20]: from sklearn.compose import ColumnTransformer
      from sklearn.preprocessing import OneHotEncoder
      ct = ColumnTransformer(transformers=[('encoder', OneHotEncoder(), [0])], remainder='passthrough')
      x = np.array(ct.fit_transform(x))

      print(x)
```

```
[ ] seconds_in_a_week = 7 * seconds_in_a_day
seconds_in_a_week

684800
```

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27°C
Browser

completed at 11:10PM

Preprocessing Data.ipynb

File Edit View Insert Runtime Tools Help All changes saved

Files

- sample_data
- Data.csv

```
[13]: [{"Germany": 40.0, 63777.77777777778},
      {"France": 35.0, 50000.0},
      {"Spain": 30.77777777777778, 52000.0},
      {"France": 40.0, 70000.0},
      {"Germany": 50.0, 83000.0},
      {"France": 37.0, 67000.0}]
```

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[20]: from sklearn.compose import ColumnTransformer
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      print(x)
```

```
[[1.0 0.0 1.0 0.0 0.0 0.0 44.0 72000.0]
 [0.0 1.0 0.0 0.0 1.0 27.0 40000.0]
 [0.0 1.0 0.0 1.0 0.0 30.0 54000.0]
 [0.0 1.0 0.0 0.0 1.0 30.0 61000.0]
 [0.0 1.0 0.0 1.0 0.0 40.0 63777.77777777778]
 [1.0 0.0 1.0 0.0 0.0 35.0 50000.0]
 [0.0 1.0 0.0 0.0 1.0 30.77777777777778 52000.0]
 [1.0 0.0 1.0 0.0 0.0 40.0 70000.0]
 [0.0 1.0 0.0 1.0 0.0 50.0 83000.0]
 [1.0 0.0 1.0 0.0 0.0 37.0 67000.0]]
```

```
[ ] seconds_in_a_week = 7 * seconds_in_a_day
seconds_in_a_week
```

27°C
Browser

completed at 11:10PM

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Preprocessing Data.ipynb

File Edit View Insert Runtime Tools Help All changes saved

Comment Share

Files

- sample_data
- Data.csv

```
[20]: from sklearn.compose import ColumnTransformer
      from sklearn.preprocessing import OneHotEncoder
      ct = ColumnTransformer(transformers=[('encoder', OneHotEncoder(), [0])], remainder='passthrough')
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[[1.0 0.0 1.0 0.0 0.0 44.0 72000.0]
 [0.0 1.0 0.0 0.0 1.0 17.0 40000.0]
 [0.0 1.0 0.0 1.0 0.0 30.0 54000.0]
 [0.0 1.0 0.0 0.0 1.0 30.0 61000.0]
 [0.0 1.0 0.0 1.0 0.0 40.0 63777.77777777778]
 [1.0 0.0 1.0 0.0 0.0 35.0 58000.0]
 [0.0 1.0 0.0 0.0 1.0 38.77777777777778 52000.0]
 [1.0 0.0 1.0 0.0 0.0 40.0 75000.0]
 [0.0 1.0 0.0 1.0 0.0 50.0 93000.0]
 [1.0 0.0 1.0 0.0 0.0 17.0 67000.0]]

from sklearn.preprocessing import LabelEncoder
le = LabelEncoder()
y = le.fit_transform(y)

[ ] seconds_in_a_week = 7 * seconds_in_a_day
seconds_in_a_week
```

completed at 11:10 PM

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2014 17/03/2023

```
colab.research.google.com/drive/1w07z3tgy54dsD8j3B4f6cJm1PWWHscsE3o=MjOFQnUWVO-Aumapfer+2

Preprocessing Data.ipynb
File Edit View Insert Runtime Tools Help Saving...

Files
sample_data
Data.csv

[20] from sklearn.compose import ColumnTransformer
from sklearn.preprocessing import OneHotEncoder
ct = ColumnTransformer(transformers=[('encoder', OneHotEncoder(), [0])], remainder='passthrough')
x = np.array(ct.fit_transform(x))

[21] print(x)

[[1.0 0.0 1.0 0.0 0.0 44.0 72000.0]
 [0.0 1.0 0.0 0.0 1.0 27.0 48000.0]
 [0.0 1.0 0.0 1.0 0.0 30.0 54000.0]
 [0.0 1.0 0.0 0.0 1.0 38.0 61000.0]
 [0.0 1.0 0.0 1.0 0.0 40.0 63777.77777777778]
 [1.0 0.0 1.0 0.0 0.0 35.0 58000.0]
 [0.0 1.0 0.0 0.0 1.0 38.77777777777778 52000.0]
 [1.0 0.0 1.0 0.0 0.0 40.0 75000.0]
 [0.0 1.0 0.0 1.0 0.0 50.0 83000.0]
 [1.0 0.0 1.0 0.0 0.0 37.0 67000.0]]

[22] from sklearn.preprocessing import LabelEncoder
le = LabelEncoder()
y = le.fit_transform(y)

[ ] seconds_in_a_week = 7 * seconds_in_a_day
seconds_in_a_week
```

```
colab.research.google.com/drive/1w07z3tgy54dsD8j3B4f6cJm1PWWHscsE3o=MjOFQnUWVO-Aumapfer+2

Preprocessing Data.ipynb
File Edit View Insert Runtime Tools Help

Files
sample_data
Data.csv

[21] [[0.0 1.0 0.0 1.0 0.0 40.0 63777.77777777778]
 [1.0 0.0 1.0 0.0 0.0 35.0 58000.0]
 [0.0 1.0 0.0 0.0 1.0 38.77777777777778 52000.0]
 [1.0 0.0 1.0 0.0 0.0 40.0 75000.0]
 [0.0 1.0 0.0 1.0 0.0 50.0 83000.0]
 [1.0 0.0 1.0 0.0 0.0 37.0 67000.0]]

[22] from sklearn.preprocessing import LabelEncoder
le = LabelEncoder()
y = le.fit_transform(y)

print(y)

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Colab notebooks are Jupyter notebooks that are hosted by Colab. To learn more about the Jupyter project, see jupyter.org.

Data science

With Colab you can harness the full power of popular Python libraries to analyze and visualize data. The code cell below uses numpy to
```

Colab Panel

Colab Icons

Welcome To

Preprocessing

colab-research

New Tab

Course: [25]

WhatsApp

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Preprocessing Data.ipynb

File Edit View Insert Runtime Tools Help All changes saved

Files

sample_dataData.csv

[21]

[0.0 1.0 0.0 1.0 0.0 40.0 63777.77777777778]
[1.0 0.0 1.0 0.0 0.0 35.0 58000.0]
[0.0 1.0 0.0 0.0 1.0 38.77777777777778 52000.0]
[1.0 0.0 1.0 0.0 0.0 40.0 75000.0]
[0.0 1.0 0.0 1.0 0.0 50.0 83000.0]
[1.0 0.0 1.0 0.0 0.0 37.0 67000.0]

[22] from sklearn.preprocessing import LabelEncoder
le = LabelEncoder()
y = le.fit_transform(y)

print(y)

[0 1 0 0 1 1 0 1 0 1]

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Data science

completed at 11:17PM

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Preprocessing Data.ipynb

File Edit View Insert Runtime Tools Help

Comment Share 5

Files

- sample_data
- Data.csv

```
[21]: [[0.0 1.0 0.0 1.0 0.0 40.0 63777.77777777778]
      [1.0 0.0 1.0 0.0 0.0 35.0 58000.0]
      [0.0 1.0 0.0 0.0 1.0 38.77777777777778 52000.0]
      [1.0 0.0 1.0 0.0 0.0 49.0 75000.0]
      [0.0 1.0 0.0 1.0 0.0 50.0 83000.0]
      [1.0 0.0 1.0 0.0 0.0 37.0 67000.0]]

[22]: from sklearn.preprocessing import LabelEncoder
le = LabelEncoder()
y = le.fit_transform(y)

[23]: print(y)

[0 1 0 0 1 1 0 1 0 1]
```

```
[24]: from sklearn.model_selection import train_test_split
x_train, x_test, y_train, y_test = train_test_split(x, y, test_size=0.2, random_state=1)
```

Data science

With Colab you can harness the full power of popular Python libraries to analyze and visualize data. The code cell below uses **numpy** to generate some random data, and uses **matplotlib** to visualize it. To edit the code, just click the cell and start editing.

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Borevan

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Preprocessing Data.ipynb

File Edit View Insert Runtime Tools Help All changes saved

Comment Share 5

Files

- sample_data
- Data.csv

```
[21]: [[0.0 1.0 0.0 1.0 0.0 40.0 63777.77777777778]
      [1.0 0.0 1.0 0.0 0.0 35.0 58000.0]
      [0.0 1.0 0.0 0.0 1.0 38.77777777777778 52000.0]
      [1.0 0.0 1.0 0.0 0.0 49.0 75000.0]
      [0.0 1.0 0.0 1.0 0.0 50.0 83000.0]
      [1.0 0.0 1.0 0.0 0.0 37.0 67000.0]]

[22]: from sklearn.preprocessing import LabelEncoder
le = LabelEncoder()
y = le.fit_transform(y)

[23]: print(y)

[0 1 0 0 1 1 0 1 0 1]
```

```
[24]: from sklearn.model_selection import train_test_split
x_train, x_test, y_train, y_test = train_test_split(x, y, test_size=0.2, random_state=1)
```

Data science

With Colab you can harness the full power of popular Python libraries to analyze and visualize data. The code cell below uses **numpy** to generate some random data, and uses **matplotlib** to visualize it. To edit the code, just click the cell and start editing.

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Preprocessing Data.ipynb

File Edit View Insert Runtime Tools Help All changes saved

Files

- sample_data
- Data.csv

Code

```
[21] [0.0 1.0 0.0 1.0 0.0 40.0 63777.77777777778]
      [1.0 0.0 1.0 0.0 0.0 35.0 58000.0]
      [0.0 1.0 0.0 0.0 1.0 38.77777777777778 52000.0]
      [1.0 0.0 1.0 0.0 0.0 48.0 75000.0]
      [0.0 1.0 0.0 1.0 0.0 50.0 83000.0]
      [1.0 0.0 1.0 0.0 0.0 37.0 67000.0]
```

```
[22] from sklearn.preprocessing import LabelEncoder
      le = LabelEncoder()
      y = le.fit_transform(y)
```

```
[23] print(y)

      [0 1 0 0 1 1 0 1 0 1]
```

```
from sklearn.model_selection import train_test_split
x_train, x_test, y_train, y_test = train_test_split(x, y, test_size=0.2, random_state=1)

print(x_train)
```

Data science

With Colab you can harness the full power of popular Python libraries to analyze and visualize data. The code cell below uses **numpy** to generate some random data, and uses **matplotlib** to visualize it. To edit the code, just click the cell and start editing.

completed at 11:23PM

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Preprocessing Data.ipynb

File Edit View Insert Runtime Tools Help All changes saved

Files

- sample_data
- Data.csv

Code

```
[23] print(y)

      [0 1 0 0 1 1 0 1 0 1]
```

```
[26] from sklearn.model_selection import train_test_split
      x_train, x_test, y_train, y_test = train_test_split(x, y, test_size=0.2, random_state=1)
```

```
print(x_train)
```

```
[0.0 1.0 0.0 0.0 1.0 38.77777777777778 52000.0]
[0.0 1.0 0.0 1.0 0.0 40.0 63777.77777777778]
[1.0 0.0 1.0 0.0 0.0 64.0 72000.0]
[0.0 1.0 0.0 0.0 1.0 30.0 61000.0]
[0.0 1.0 0.0 0.0 1.0 27.0 48000.0]
[1.0 0.0 1.0 0.0 0.0 40.0 70000.0]
[0.0 1.0 0.0 1.0 0.0 50.0 83000.0]
[1.0 0.0 1.0 0.0 0.0 35.0 58000.0]
```

Data science

With Colab you can harness the full power of popular Python libraries to analyze and visualize data. The code cell below uses **numpy** to generate some random data, and uses **matplotlib** to visualize it. To edit the code, just click the cell and start editing.

```
import numpy as np
```

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Preprocessing Data.ipynb

Comment Share

Files

sample_data

Data.csv

+ Code + Test

```
[23] print(y)

[0 1 0 0 1 1 0 1 0 1]

[26] from sklearn.model_selection import train_test_split
x_train, x_test, y_train, y_test = train_test_split(x, y, test_size=0.2, random_state=1)

[27] print(x_train)

[[0.0 1.0 0.0 0.0 1.0 10.777777777777778 52000.0]
 [0.0 1.0 0.0 1.0 0.0 40.0 65777.77777777778]
 [1.0 0.0 1.0 0.0 0.0 64.0 72000.0]
 [0.0 1.0 0.0 0.0 1.0 30.0 61000.0]
 [0.0 1.0 0.0 0.0 1.0 27.0 48000.0]
 [1.0 0.0 1.0 0.0 0.0 40.0 70000.0]
 [0.0 1.0 0.0 1.0 0.0 50.0 83000.0]
 [1.0 0.0 1.0 0.0 0.0 35.0 50000.0]]

print(x_test)
```

Data science

With Colab you can harness the full power of popular Python libraries to analyze and visualize data. The code cell below uses **numpy** to generate some random data, and uses **matplotlib** to visualize it. To edit the code, just click the cell and start editing.

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Preprocessing Data.ipynb

File Edit View Insert Runtime Tools Help

Files

sample_dataData.csv

+ Code + Test

```
[23] print(y)

[0 1 0 0 1 1 0 1 0 1]

[26] from sklearn.model_selection import train_test_split
x_train, x_test, y_train, y_test = train_test_split(x, y, test_size=0.2, random_state=1)

[27] print(x_train)

[[0.0 1.0 0.0 0.0 1.0 38.77777777777778 52000.0]
 [0.0 1.0 0.0 1.0 0.0 40.0 63777.77777777778]
 [1.0 0.0 1.0 0.0 0.0 44.0 72000.0]
 [0.0 1.0 0.0 0.0 1.0 38.0 61000.0]
 [0.0 1.0 0.0 0.0 1.0 27.0 48000.0]
 [1.0 0.0 1.0 0.0 0.0 48.0 70000.0]
 [0.0 1.0 0.0 1.0 0.0 50.0 83000.0]
 [1.0 0.0 1.0 0.0 0.0 35.0 58000.0]]

print(x_test)

[[0.0 1.0 0.0 1.0 0.0 30.0 54000.0]
 [1.0 0.0 1.0 0.0 0.0 37.0 67000.0]]
```

Data science

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Preprocessing Data.ipynb

File Edit View Insert Runtime Tools Help

Files

sample_dataData.csv

+ Code + Test

```
[26] x_train, x_test, y_train, y_test = train_test_split(x, y, test_size=0.2, random_state=1)

[27] print(x_train)

[[0.0 1.0 0.0 0.0 1.0 38.77777777777778 52000.0]
 [0.0 1.0 0.0 1.0 0.0 40.0 63777.77777777778]
 [1.0 0.0 1.0 0.0 0.0 44.0 72000.0]
 [0.0 1.0 0.0 0.0 1.0 38.0 61000.0]
 [0.0 1.0 0.0 0.0 1.0 27.0 48000.0]
 [1.0 0.0 1.0 0.0 0.0 48.0 70000.0]
 [0.0 1.0 0.0 1.0 0.0 50.0 83000.0]
 [1.0 0.0 1.0 0.0 0.0 35.0 58000.0]]

print(x_test)

[[0.0 1.0 0.0 1.0 0.0 30.0 54000.0]
 [1.0 0.0 1.0 0.0 0.0 37.0 67000.0]]

print(y_train)
```

Data science

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With Colab you can harness the full power of popular Python libraries to analyze and visualize data. The code cell below uses **numpy** to generate some random data, and uses **matplotlib** to visualize it. To edit the code, just click the cell and start editing.

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Preprocessing Data.ipynb

File Edit View Insert Runtime Tools Help All changes saved

Files

- sample_data
- Data.csv

```
[26] x_train, x_test, y_train, y_test = train_test_split(x, y, test_size=0.2, random_state=1)

[27] print(x_train)

[[0.0 1.0 0.0 0.0 1.0 38.77777777777778 52000.0]
 [0.0 1.0 0.0 1.0 0.0 40.0 63777.77777777778]
 [1.0 0.0 1.0 0.0 0.0 44.0 72000.0]
 [0.0 1.0 0.0 0.0 1.0 38.0 61000.0]
 [0.0 1.0 0.0 0.0 1.0 27.0 40000.0]
 [1.0 0.0 1.0 0.0 0.0 48.0 75000.0]
 [0.0 1.0 0.0 1.0 0.0 50.0 83000.0]
 [1.0 0.0 1.0 0.0 0.0 35.0 58000.0]]

[28] print(x_test)

[[0.0 1.0 0.0 1.0 0.0 30.0 54000.0]
 [1.0 0.0 1.0 0.0 0.0 37.0 67000.0]]

[29] print(y_train)

[0 1 0 0 1 1 0 1]
```

Data science

With Colab you can harness the full power of popular Python libraries to analyze and visualize data. The code cell below uses **numpy** to

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Preprocessing Data.ipynb

File Edit View Insert Runtime Tools Help

Files

- sample_data
- Data.csv

```
[26] x_train, x_test, y_train, y_test = train_test_split(x, y, test_size=0.2, random_state=1)

[27] print(x_train)

[[0.0 1.0 0.0 0.0 1.0 38.77777777777778 52000.0]
 [0.0 1.0 0.0 1.0 0.0 40.0 63777.77777777778]
 [1.0 0.0 1.0 0.0 0.0 44.0 72000.0]
 [0.0 1.0 0.0 0.0 1.0 38.0 61000.0]
 [0.0 1.0 0.0 0.0 1.0 27.0 40000.0]
 [1.0 0.0 1.0 0.0 0.0 48.0 75000.0]
 [0.0 1.0 0.0 1.0 0.0 50.0 83000.0]
 [1.0 0.0 1.0 0.0 0.0 35.0 58000.0]]

[28] print(x_test)

[[0.0 1.0 0.0 1.0 0.0 30.0 54000.0]
 [1.0 0.0 1.0 0.0 0.0 37.0 67000.0]]

[29] print(y_train)

[0 1 0 0 1 1 0 1]

[30] print(y_test)

[0 1]
```

Data science

27°C
Browser

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Preprocessing Data.ipynb

File Edit View Insert Runtime Tools Help

Comment Share

Files

- sample_data
- Data.csv

```
[27] [[1.0 0.0 1.0 0.0 0.0 44.0 72000.0]
      [0.0 1.0 0.0 0.0 1.0 38.0 51000.0]
      [0.0 1.0 0.0 0.0 1.0 27.0 48000.0]
      [1.0 0.0 1.0 0.0 0.0 48.0 79000.0]
      [0.0 1.0 0.0 1.0 0.0 59.0 83000.0]
      [1.0 0.0 1.0 0.0 0.0 75.0 50000.0]]

[28] print(x_test)

[[0.0 1.0 0.0 1.0 0.0 50.0 54000.0]
 [1.0 0.0 1.0 0.0 0.0 37.0 57000.0]]

[29] print(y_train)

[0 1 0 0 1 1 0 1]

print(y_test)

[0 1]
```

Data science

With Colab you can harness the full power of popular Python libraries to analyze and visualize data. The code cell below uses **numpy** to generate some random data, and uses **matplotlib** to visualize it. To edit the code, just click the cell and start editing.

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Preprocessing Data.ipynb

File Edit View Insert Runtime Tools Help All changes saved

Comment Share

Files

- sample_data
- Data.csv

```
[27] [[1.0 0.0 1.0 0.0 0.0 44.0 72000.0]
      [0.0 1.0 0.0 0.0 1.0 38.0 51000.0]
      [0.0 1.0 0.0 0.0 1.0 27.0 48000.0]
      [1.0 0.0 1.0 0.0 0.0 48.0 79000.0]
      [0.0 1.0 0.0 1.0 0.0 59.0 83000.0]
      [1.0 0.0 1.0 0.0 0.0 75.0 50000.0]]

[28] print(x_test)

[[0.0 1.0 0.0 1.0 0.0 50.0 54000.0]
 [1.0 0.0 1.0 0.0 0.0 37.0 57000.0]]

[29] print(y_train)

[0 1 0 0 1 1 0 1]

print(y_test)

[0 1]

from sklearn.preprocessing import StandardScaler
sc = StandardScaler()
x_train[1:, 3:] = sc.fit_transform(x_train[1:, 3:])
x_test[1:, 3:] = sc.transform(x_test[1:, 3:])
```

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Preprocessing Data.ipynb

File Edit View Insert Runtime Tools Help

Files

- sample_data
- Data.csv

```
[# 1]

from sklearn.preprocessing import StandardScaler
sc = StandardScaler()
x_train[:, 3:] = sc.fit_transform(x_train[:, 3:])
x_test[:, 3:] = sc.transform(x_test[:, 3:])
```

Machine learning

With Colab you can import an image dataset, train an image classifier on it, and evaluate the model, all in just [a few lines of code](#). Colab notebooks execute code on Google's cloud servers, meaning you can leverage the power of Google hardware, including [GPUs and TPUs](#), regardless of the power of your machine. All you need is a browser.

Colab is used extensively in the machine learning community with applications including:

- Getting started with TensorFlow
- Developing and training neural networks
- Experimenting with TPUs
- Disseminating AI research
- Creating tutorials

To see sample Colab notebooks that demonstrate machine learning applications, see the [machine learning examples](#) below.

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Preprocessing Data.ipynb

File Edit View Insert Runtime Tools Help *All changes saved*

Files

- sample_data
- Data.csv

```
[# 1]

[39] from sklearn.preprocessing import StandardScaler
sc = StandardScaler()
x_train[:, 3:] = sc.fit_transform(x_train[:, 3:])
x_test[:, 3:] = sc.transform(x_test[:, 3:])
```

Machine learning

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Preprocessing Data.ipynb

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Comment Share

Files

- sample_data
- Data.csv

```
[# 1]

[39]: from sklearn.preprocessing import StandardScaler
      sc = StandardScaler()
      X_train[i, 3:] = sc.fit_transform(X_train[i, 3:])
      X_test[i, 3:] = sc.transform(X_test[i, 3:])

      print(X_train)
```

Colab is used extensively in the machine learning community with applications including:

- Getting started with TensorFlow
- Developing and training neural networks
- Experimenting with TPUs
- Disseminating AI research
- Creating tutorials

To see sample Colab notebooks that demonstrate machine learning applications, see the [machine learning examples](#) below.

More Resources

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Preprocessing Data.ipynb

File Edit View Insert Runtime Tools Help All changes saved

Comment Share

Files

- sample_data
- Data.csv

```
[41]: from sklearn.preprocessing import StandardScaler
      sc = StandardScaler()
      X_train[i, 3:] = sc.fit_transform(X_train[i, 3:])
      X_test[i, 3:] = sc.transform(X_test[i, 3:])

      print(X_train)
```

```
[[0.0 1.0 0.0 -0.3773582691896258 1.2909944487358058 -0.1915919438457855
-1.0781259486412427
[0.0 1.0 0.0 1.72205088075688774 -0.7745966692414834
-0.014117293757867818 -0.07813187941635487]
[1.0 0.0 1.0 -0.3773582691896258 -0.7745966692414834 0.0667895905332239
0.8535824327164546]
[0.0 1.0 0.0 -0.3773582691896258 1.2909944487358058 -0.38453819306124867
-0.387886172742079]
[0.0 1.0 0.0 -0.3773582691896258 1.2909944487358058 -1.981881144786709
-1.4284636155515482]
[1.0 0.0 1.0 -0.3773582691896258 -0.7745966692414834 1.1475343868237856
1.2326531638535488]
[0.0 1.0 0.0 1.72205088075688774 -0.7745966692414834 1.4379472860688966
1.5749918928163886]
[1.0 0.0 1.0 -0.3773582691896258 -0.7745966692414834 -0.7401495441200312
-0.5665194287757936]]
```

Featured examples

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Preprocessing Data.ipynb

File Edit View Insert Runtime Tools Help All changes saved

Files

- sample_data
- Data.csv

```
[41]: from sklearn.preprocessing import StandardScaler
      sc = StandardScaler()
      x_train[:, 3:] = sc.fit_transform(x_train[:, 3:])
      x_test[:, 3:] = sc.transform(x_test[:, 3:])

[44]: print(x_train)

[[0.0 1.0 0.0 -0.5773502691896258 1.2909944487350858 -0.1915918438457855
-1.0781259488412427]
[0.0 1.0 0.0 1.7320508075688774 -0.7745966692414834
-0.014117293757857819 -0.07913167043615407]
[1.0 0.0 1.0 -0.5773502691896258 -0.7745966692414834 0.5667985065333239
0.0316243271045408]
[0.0 1.0 0.0 -0.5773502691896258 1.2909944487350858 -0.90410918550224867
-0.387866172742979]
[0.0 1.0 0.0 -0.5773502691896258 1.2909944487350858 -1.001881144700799
-1.4204636155515822]
[1.0 0.0 1.0 -0.5773502691896258 -0.7745966692414834 1.1475343868217056
1.2316533634535488]
[0.0 1.0 0.0 1.7320508075688774 -0.7745966692414834 1.4379472099688960
1.5749518381638883]
[1.0 0.0 1.0 -0.5773502691896258 -0.7745966692414834 -0.74061495441200352
-0.5646194287757336]]

print(x_test)
x_test
```

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Preprocessing Data.ipynb

File Edit View Insert Runtime Tools Help All changes saved

Files

- sample_data
- Data.csv

```
[1.0 0.0 1.0 -0.5773502691896258 -0.7745966692414834 -0.74061495441200352
-0.5646194287757336]]

print(x_test)

[[0.0 1.0 0.0 1.7320508075688774 -0.7745966692414834 -1.4661817944830127
-0.9069571834860731]
[1.0 0.0 1.0 -0.5773502691896258 -0.7745966692414834
-0.44973664397404414 0.20564833932253823]]
```

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Featured examples

- [NeMo Voice Swap](#): Use Nvidia's NeMo conversational AI Toolkit to swap a voice in an audio fragment with a computer generated one.
- [Retraining an Image Classifier](#): Build a Keras model on top of a pre-trained image classifier to distinguish flowers.
- [Text Classification](#): Classify IMDB movie reviews as either positive or negative.
- [Style Transfer](#): Use deep learning to transfer style between images.
- [Multilingual Universal Sentence Encoder Q&A](#): Use a machine learning model to answer questions from the SQuAD dataset.
- [Video Interpolation](#): Predict what happened in a video between the first and the last frame.