**Mudah Belajar Otodidak Data Science**

**(Praktek dalam bahasa python3)**

**Disusun oleh**

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**Pertemuan 2 – Visualisasi Seaborn dan Matplotlib**

**Tujuan pembelajaran**

* Mahasiswa mampu menggunakan library seperti seaborn dan matplotlib
* Mahasiswa mampu membuat visualisasi data seperti barplot, lineplot, pieplot, histogram, scatterplot, boxplot, heatmap, dan lain-lain.

**Data Tabular – Visualisasi Iris Datataset**

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| # lib manipulasi data  import pandas as pd  import numpy as np    # lib visualisasi data  import seaborn as sns  import matplotlib.pyplot as plt    # lib praproses data  from sklearn.preprocessing import MinMaxScaler |

1. Akuisisi Data

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| # load dataset  dataset = pd.read\_csv("../dataset/iris.csv")    # lihat metadataset  print(dataset.info()) |
| <class 'pandas.core.frame.DataFrame'>  RangeIndex: 150 entries, 0 to 149  Data columns (total 5 columns):  # Column Non-Null Count Dtype  --- ------ -------------- -----  0 sepal\_length 150 non-null float64  1 sepal\_width 150 non-null float64  2 petal\_length 150 non-null float64  3 petal\_width 150 non-null float64  4 species 150 non-null object  dtypes: float64(4), object(1)  memory usage: 6.0+ KB |

1. Normalisasi Data

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| # Set features and Labels  x = dataset[["sepal\_length","sepal\_width","petal\_length","petal\_width"]].values  y = dataset["species"].values |
| # proses normalisasi data  scaler = MinMaxScaler(feature\_range=(0, 1))  scaled = scaler.fit\_transform(x) |
| # hasil normalisasi data  dataset = pd.concat([    pd.DataFrame(scaled, columns=["sepal\_length","sepal\_width","petal\_length","petal\_width"]),    pd.DataFrame(y, columns=["species"]),  ], axis=1) |
| # cek hasil normalisasi data  print(dataset) |
| sepal\_length sepal\_width petal\_length petal\_width species  0 0.222222 0.625000 0.067797 0.041667 setosa  1 0.166667 0.416667 0.067797 0.041667 setosa  2 0.111111 0.500000 0.050847 0.041667 setosa  3 0.083333 0.458333 0.084746 0.041667 setosa  4 0.194444 0.666667 0.067797 0.041667 setosa  .. ... ... ... ... ...  145 0.666667 0.416667 0.711864 0.916667 virginica  146 0.555556 0.208333 0.677966 0.750000 virginica  147 0.611111 0.416667 0.711864 0.791667 virginica  148 0.527778 0.583333 0.745763 0.916667 virginica  149 0.444444 0.416667 0.694915 0.708333 virginica  [150 rows x 5 columns] |

1. Visualisasi Data

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| # create barplot  fig, ax = plt.subplots(figsize=(8,4))  sns.countplot(dataset, x="species", hue="species")    # set labels  ax.set\_title("", fontsize=14)  ax.set\_xlabel("", fontsize=12)  ax.set\_ylabel("", fontsize=12)  ax.grid(True)    # show  plt.tight\_layout()  plt.show() |
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| Gambar x. Output program |

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| # function scatter plot  def scatter(data, x, y):      # create scatter plots    fig, ax = plt.subplots(figsize = (8,4))    sns.scatterplot(data=data, x=x, y=y, hue="species")      # set labels    ax.set\_title("", fontsize=14)    ax.set\_xlabel("", fontsize=12)    ax.set\_ylabel("", fontsize=12)    ax.legend(loc='upper left')    ax.grid(True)    plt.tight\_layout()      # show plots    plt.tight\_layout()    plt.show() |
| # call function scatter  scatter(dataset, "petal\_length", "sepal\_length") |
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| Gambar x. Output program |
| # call function scatter  scatter(dataset, "petal\_length", "petal\_width") |
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| Gambar x. Output program |

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| # create heatmap corr  fig, ax = plt.subplots(figsize=(8,4))  sns.heatmap(    dataset.corr(numeric\_only=True), vmin=-1, vmax=1,    cmap="viridis", annot=True, fmt=".3f", linewidths=1)    # set labels  ax.set\_title("", fontsize=14)  ax.set\_xlabel("", fontsize=12)  ax.set\_ylabel("", fontsize=12)    # show plot  plt.show() |
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| # create kdeplot  fig, ax = plt.subplots(nrows=1, ncols=2, figsize=(12,4))  sns.kdeplot(data=dataset, x="sepal\_width", hue="species", fill=True, ax=ax[0])  ax[0].set\_title("", fontsize=14)  ax[0].set\_xlabel("", fontsize=12)  ax[0].set\_ylabel("", fontsize=12)  ax[0].grid(True)    # create kdeplot  sns.kdeplot(data=dataset, x="petal\_width", y="sepal\_width", hue="species", fill=True, ax=ax[1])  ax[1].set\_title("", fontsize=14)  ax[1].set\_xlabel("", fontsize=12)  ax[1].set\_ylabel("", fontsize=12)  ax[1].grid(True)    # show plots  plt.tight\_layout()  plt.show() |
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| # define boxplot  fig, ax = plt.subplots(figsize=(8,4))  ax.boxplot(    dataset[["sepal\_length", "sepal\_width", "petal\_length", "petal\_width"]],    labels=["sepal\_length", "sepal\_width", "petal\_length", "petal\_width"],    patch\_artist=True, widths=(0.75, 0.75, 0.75, 0.75)  )    # set labels  ax.set\_title('')  ax.set\_xlabel('')  ax.set\_ylabel('')  ax.grid(True)    # show boxplot  plt.tight\_layout()  plt.show() |
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| Gambar x. Output program |