Aplikasi Regresi_Kadek Wisnu Parijata Putra_Metode Numerik Kelas D

File Edit View Insert Runtime Tools Help All changes saved

Comment Share Connect

+ Code + Text

Kadek Wisnu Parijata Putra / 21120122140036

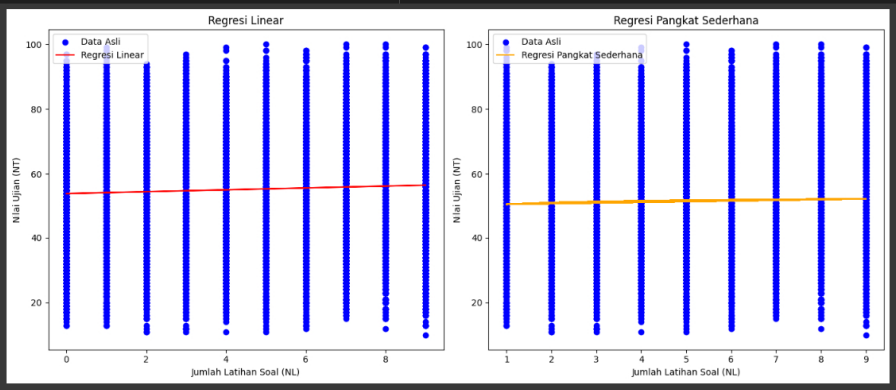
Aplikasi Regresi - Metode Numerik Kelas D

```
[ ] import numpy as np
    import pandas as pd
    import matplotlib.pyplot as plt
    from sklearn.linear_model import LinearRegression
    from sklearn.metrics import mean_squared_error
```

```
[ ] # Impor data dari file CSV
    file_path = '/content/Student_Performance.csv'
    data = pd.read_csv(file_path)

    # Extract relevant columns
    NL = data['Sample Question Papers Practiced'].values
    NT = data['Performance Index'].values

    # Reshape NL for sklearn
    NL_reshaped = NL.reshape(-1, 1)
```

```
[ ] # Metode 1: Regresi Linear
    linear_model = LinearRegression()
    linear_model.fit(NL_reshaped, NT)
    NT_pred_linear = linear_model.predict(NL_reshaped)

    # Metode 2: Regresi Pangkat Sederhana
    # y = Cxˆb => log(y) = log(C) + b*log(x)
    # Remove non-positive values for log transformation
    NL_positive = NL[NL > 0]
    NT_positive = NT[NL > 0]

    # Transform to log scale
    log_NL = np.log(NL_positive)
    log_NT = np.log(NT_positive)

    # Fit power model
    power_model = LinearRegression()
    power_model.fit(log_NL.reshape(-1, 1), log_NT)
    log_C_power = power_model.intercept_
    b_power = power_model.coef_[0]
    C_power = np.exp(log_C_power)
    NT_pred_log_power = power_model.predict(log_NL.reshape(-1, 1))
    NT_pred_power = np.exp(NT_pred_log_power)

    # Prepare NL and NT with filtered zero values for plotting and comparison
    NL_filtered = NL[NL > 0]
```

```
[ ] # Plot data dan hasil regresi
    plt.figure(figsize=(14, 6))

    # Plot Metode Linear
    plt.subplot(1, 2, 1)
    plt.scatter(NL, NT, color='blue', label='Data Asli')
    plt.plot(NL, NT_pred_linear, color='red', label='Regresi Linear')
    plt.xlabel('Jumlah Latihan Soal (NL)')
    plt.ylabel('Nilai Ujian (NT)')
    plt.title('Regresi Linear')
    plt.legend()

    # Plot Metode Pangkat Sederhana
    plt.subplot(1, 2, 2)
    plt.scatter(NL_filtered, NT_positive, color='blue', label='Data Asli')
    plt.plot(NL_filtered, NT_pred_power, color='orange', label='Regresi Pangkat Sederhana')
    plt.xlabel('Jumlah Latihan Soal (NL)')
    plt.ylabel('Nilai Ujian (NT)')
    plt.title('Regresi Pangkat Sederhana')
    plt.legend()

    plt.tight_layout()
    plt.show()
```




```
# Hitung galat RMS
rms_linear = np.sqrt(mean_squared_error(NT, NT_pred_linear))
rms_power = np.sqrt(mean_squared_error(NT_positive, NT_pred_power))

print(f"RMS galat - Regresi Linear: {rms_linear}")
print(f"RMS galat - Regresi Pangkat Sederhana: {rms_power}")
```

```
RMS galat - Regresi Linear: 19.19360524526426
RMS galat - Regresi Pangkat Sederhana: 19.565035257712687
```