SVDKorelacja

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Sprawozdanie
Matematyka Konkretna
Prowadzący: prof. dr hab. Vasyl Martsenyuk
Laboratorium 2
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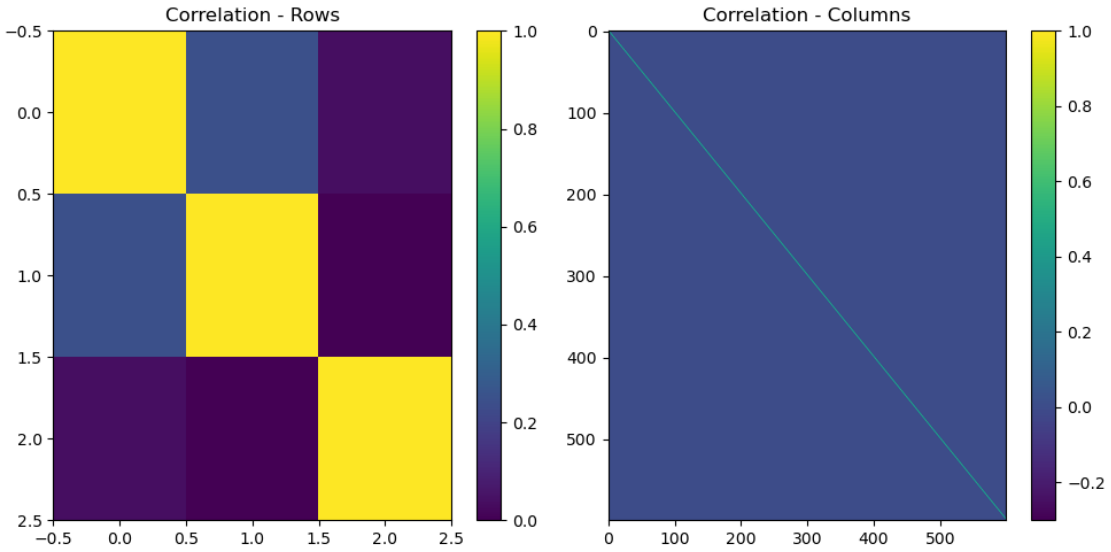
Metoda SVD w celu obliczenia korelacji Wariant 10
Link do repozytorium: https://github.com/Maksiolo20/MK

[10]:
```
# !pip install opencv-python jeżeli występuje błąd cv2 not installed
import numpy as np
import matplotlib.pyplot as plt
import cv2

# Load an image from a file
image = cv2.imread('10.webp')

# Perform SVD for both rows and columns
U_row, S_row, Vt_row = np.linalg.svd(image, full_matrices=False)  # For rows
U_col, S_col, Vt_col = np.linalg.svd(image.T, full_matrices=False)  # For␣
 ↪columns

# Flatten the U matrices
U_row_flat = U_row.reshape(-1, U_row.shape[-1])
U_col_flat = U_col.reshape(-1, U_col.shape[-1])

# Calculate correlation matrices for rows and columns
corr_matrix_row = np.corrcoef(U_row_flat, rowvar=False)
corr_matrix_col = np.corrcoef(U_col_flat, rowvar=False)

# Display correlation matrices graphically
plt.figure(figsize=(10, 5))
plt.subplot(1, 2, 1)
plt.title('Correlation - Rows')
plt.imshow(corr_matrix_row, cmap='viridis', aspect='auto')
plt.colorbar()

plt.subplot(1, 2, 2)
plt.title('Correlation - Columns')
```

```
plt.imshow(corr_matrix_col, cmap='viridis', aspect='auto')
plt.colorbar()

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

```
Requirement already satisfied: opencv-python in
c:\users\maksiolo\anaconda3\lib\site-packages (4.8.1.78)
Requirement already satisfied: numpy>=1.21.2 in
c:\users\maksiolo\anaconda3\lib\site-packages (from opencv-python) (1.24.3)
```



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