

Analiza techniczna MACD

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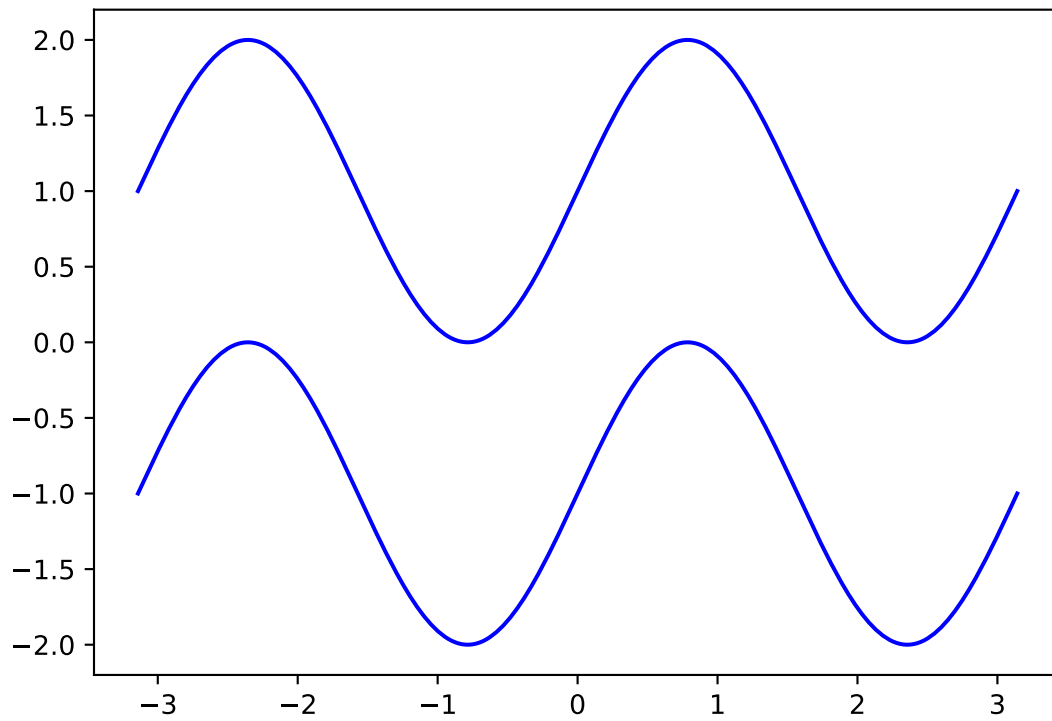
MACD

```
def calculate_macd(data, short_window=12, long_window=26, signal_window=9):
    short_ema = calculate_ema(data['Zamknienie'], short_window)
    long_ema = calculate_ema(data['Zamknienie'], long_window)
    macd_line = short_ema - long_ema
    signal_line = calculate_ema(macd_line, signal_window)
    histogram = macd_line - signal_line
    return macd_line, signal_line, histogram
```

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

n = 256
X = np.linspace(-np.pi, np.pi, n, endpoint=True)
Y = np.sin(2*X)

plt.plot(X, Y+1, color='blue', alpha=1.00)
plt.plot(X, Y-1, color='blue', alpha=1.00)
plt.show()
```



EMAN

```
def calculate_ema(data, window):  
    alpha = 2 / (window + 1)  
    ema = data.copy()  
    ema.iloc[0] = data.iloc[0]  
  
    for i in range(1, len(data)):  
        ema.iloc[i] = alpha * data.iloc[i] + (1 - alpha) * ema.iloc[i - 1]  
  
    return ema
```