Machine Learning e Finanças

Código exemplo

```
import yfinance as yf

symbol = "AAPL"
start_date = "2020-01-01"
end_date = "2023-12-31"

data = yf.download(symbol, start=start_date, end=end_date)

print(data.describe())

import matplotlib.pyplot as plt

plt.figure(figsize=(12, 6))
plt.plot(data['Close'], label='Preço de Fechamento')
plt.title('Evolução do Preço de Fechamento')
plt.xlabel('Data')
plt.ylabel('Preço ($)')
plt.legend()
plt.show()

import seaborn as sns

plt.figure(figsize=(8, 6))
sns.heatmap(data.corr(), annot=True, cmap='coolwarm')
plt.title('Matriz de Correlação')
plt.show()

data = data[['Open', 'High', 'Low', 'Volume', 'Close']]
data.dropna(inplace=True)

X = data[['Open', 'High', 'Low', 'Volume']]
y = data['Close']

from sklearn.model_selection import train_test_split
from sklearn.linear_model import LinearRegression

X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=42)
model = LinearRegression()
model.fit(X_train, y_train)


from sklearn.metrics import mean_squared_error, r2_score
```

```
predictions = model.predict(X_test)
mse = mean_squared_error(y_test, predictions)
r2 = r2_score(y_test, predictions)

print(f"MSE: {mse}")
print(f"R²: {r2}")

import numpy as np

latest_data = np.array(data.iloc[-1][['Open', 'High', 'Low', 'Volume']]).reshape(1, -1)
predicted_close = model.predict(latest_data)[0]
print(f"Preço previsto: ${predicted_close:.2f}")

import joblib

joblib.dump(model, "modelo_regressao.joblib")
```