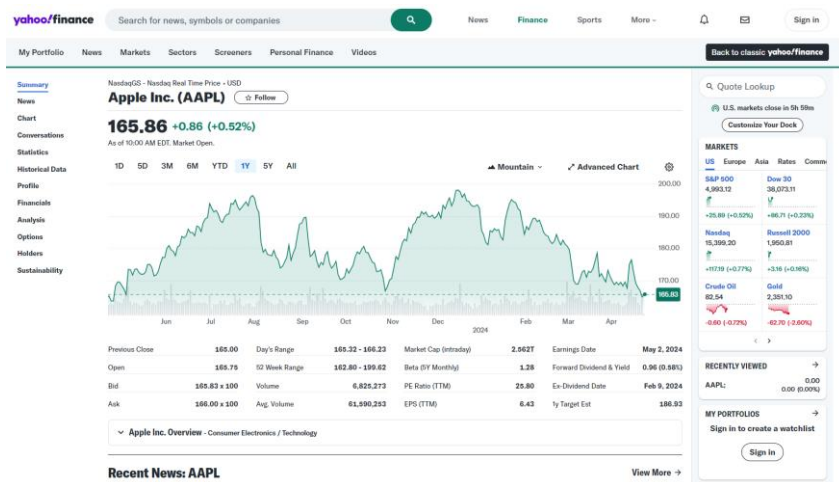


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 Mata Kuliah : Machine Learning 2
 Pembahasan : RNN Apple
 Pokok Pemb : Membuat model forecasting saham yahoo finance

DOWNLOAD DATASET

Dataset yang akan kita gunakan adalah dataset bersumber dari yahoo finance

<https://finance.yahoo.com/quote/AAPL>



```
1 df = yf.download(tickers=['AAPL'], period='1y')
2 y = df['Close'].fillna(method='ffill')
3 y = y.values.reshape(-1, 1)
```

IMPORT LIBRARY



```
1 import numpy as np
2 import pandas as pd
3 import yfinance as yf
4 import tensorflow as tf
5 from tensorflow.keras.layers import Dense, LSTM
6 from tensorflow.keras.models import Sequential
7 from tensorflow.keras.utils import plot_model
8 from sklearn.preprocessing import MinMaxScaler
```

PREPROCESSING DATA

```
1 scaler = MinMaxScaler(feature_range=(0, 1))
2 scaler = scaler.fit(y)
3 y = scaler.transform(y)
```



```
1 n_lookback = 60 # jumlah data input (lookback period)
2 n_forecast = 60 # jumlah data output (forecast period)
3
4 X = []
5 Y = []
6
7 for i in range(n_lookback, len(y) - n_forecast + 1):
8     X.append(y[i - n_lookback: i])
9     Y.append(y[i: i + n_forecast])
10
11 X = np.array(X)
12 Y = np.array(Y)
```

MODELING



```
1 model = Sequential()  
2 model.add(LSTM(units=50, return_sequences=True, input_shape=(n_lookback, 1)))  
3 model.add(LSTM(units=50))  
4 model.add(Dense(n_forecast))
```



```
1 model.summary()
```



```
1 plot_model(model, show_shapes = True)
```



```
1 model.compile(loss='mean_squared_error', optimizer='adam')
```



```
1 model.fit(X, Y, epochs=100, batch_size=32, validation_split= 0.1)
```

MEMBUAT FORECAST



```

1 X_ = y[- n_lookback:] # urutan inputan terakhir
2 X_ = X_.reshape(1, n_lookback, 1)
3
4 Y_ = model.predict(X_).reshape(-1, 1)
5 Y_ = scaler.inverse_transform(Y_)

```

MENAMPILKAN HASIL FORECAST



```

1 df_past = df[['Close']].reset_index()
2 df_past.rename(columns={'index': 'Date', 'Close': 'Actual'}, inplace=True)
3 df_past['Date'] = pd.to_datetime(df_past['Date'])
4 df_past['Forecast'] = np.nan
5 df_past['Forecast'].iloc[-1] = df_past['Actual'].iloc[-1]

```



```

1 df_future = pd.DataFrame(columns=['Date', 'Actual', 'Forecast'])
2 df_future['Date'] = pd.date_range(start=df_past['Date'].iloc[-1] + pd.Timedelta(days=1), periods=n_forecast)
3 df_future['Forecast'] = Y_.flatten()
4 df_future['Actual'] = np.nan

```



```

1 results = df_past._append(df_future).set_index('Date')

```



```

1 results.plot(title='AAPL')

```