test

July 7, 2025

[1]:

```python
import sys
sys.path.append('../src')
```

[2]:

```python
from ingestion.data_loader import fetch_stock_data, simulate_cash_inflow
from processing.data_cleaner import clean_stock_data
from forecasting.prophet_forecaster import forecast_cash_inflow,␣
 ↪export_forecast_to_csv, plot_forecast_with_aging
from features.ar_aging import compute_aging_buckets

# Step 1: Load data
df = fetch_stock_data('AAPL', '2020-01-01', '2024-12-31')
df = clean_stock_data(df)
df = simulate_cash_inflow(df)

# Step 2: Forecast
forecast, model = forecast_cash_inflow(df, periods=30)

# Prepare aging
aging_df = compute_aging_buckets(df)

# Step 3: Plot
plot_forecast_with_aging(forecast, df_actual=df, aging_df=aging_df)

# Step 4: Export
export_forecast_to_csv(forecast, "../data/forecast/aapl_forecast_30d.csv")
```

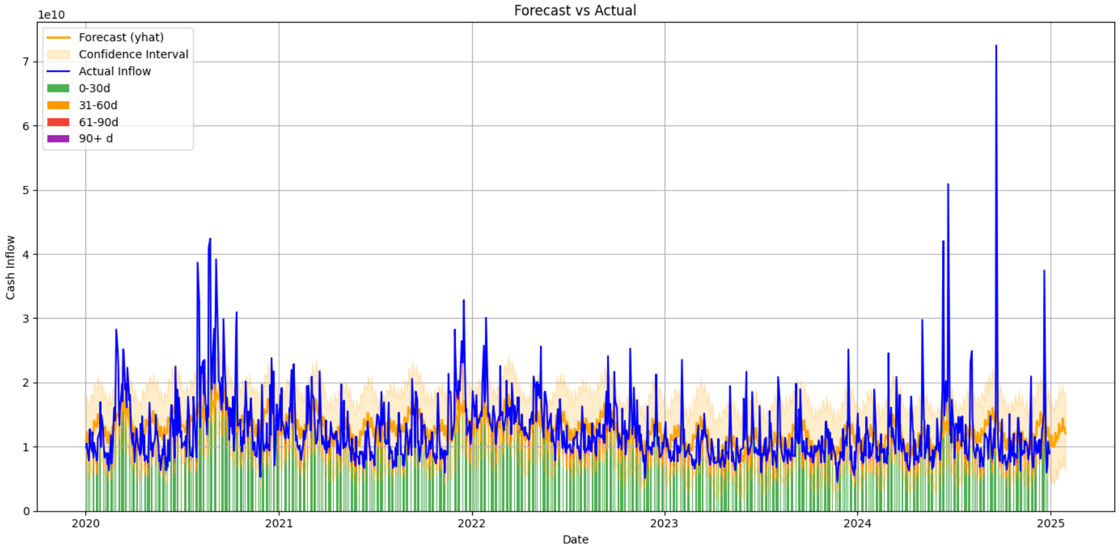
```
/home/oxy/repo/ar-cashflow-forecasting/oxy/lib/python3.13/site-
packages/tqdm/auto.py:21: TqdmWarning: IProgress not found. Please update
jupyter and ipywidgets. See
https://ipywidgets.readthedocs.io/en/stable/user_install.html
  from .autonotebook import tqdm as notebook_tqdm
```

```
[INFO] Fetching stock data for AAPL from 2020-01-01 to 2024-12-31
```

```
/home/oxy/repo/ar-cashflow-
forecasting/notebooks/../src/ingestion/data_loader.py:20: FutureWarning:
YF.download() has changed argument auto_adjust default to True
  df = yf.download(ticker, start=start_date, end=end_date)
[*********************100%***********************]  1 of 1 completed
```

```
12:05:46 - cmdstanpy - INFO - Chain [1] start processing
12:05:46 - cmdstanpy - INFO - Chain [1] done processing
```

```
[DEBUG] Flattened columns: ['Date', 'Close', 'High', 'Low', 'Open', 'Volume']
[DEBUG] Incoming columns: ['Date', 'Close', 'Volume']
[DEBUG] Mapped: Date -> date, Close -> close, Volume -> volume
```



```
[INFO] Forecast saved to ../data/forecast/aapl_forecast_30d.csv
```

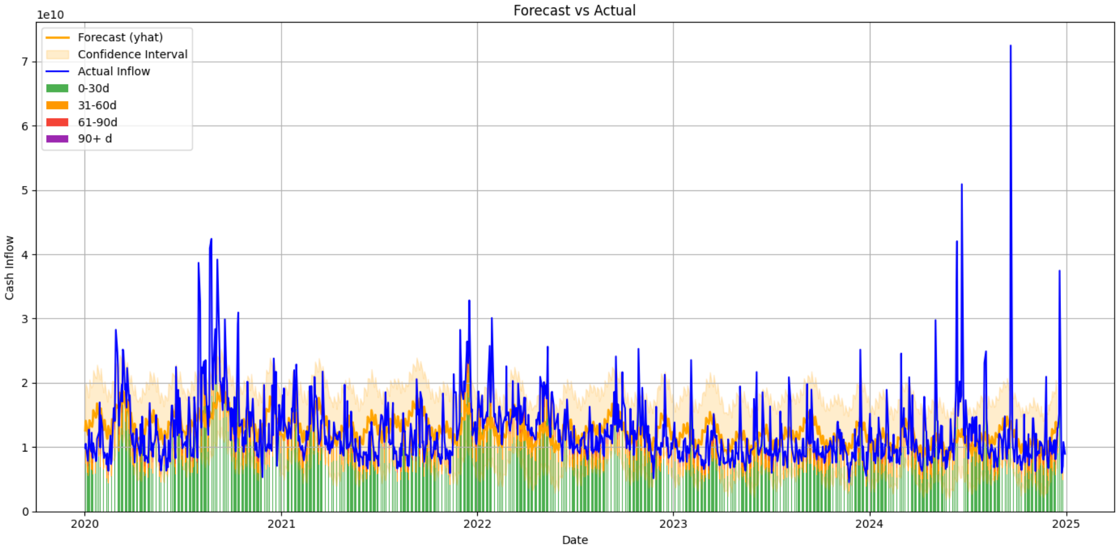
[3]:
```python
from evaluation.backtest import backtest_prophet
from forecasting.prophet_forecaster import plot_forecast_with_aging

metrics, forecast, model = backtest_prophet(df, forecast_days=30)
print("Evaluation Metrics:")
print(metrics)

plot_forecast_with_aging(forecast, df_actual=df, aging_df=aging_df)
```

```
12:06:25 - cmdstanpy - INFO - Chain [1] start processing
12:06:25 - cmdstanpy - INFO - Chain [1] done processing
```

```
Evaluation Metrics:
{'MAPE': 23.1, 'RMSE': np.float64(3549435163.55)}
```


Forecast vs Actual
1e10
Forecast (yhat)
Confidence Interval
Actual Inflow
0-30d
31-60d
61-90d
90+ d
Cash Inflow
0
1
2
3
4
5
6
7
Date
2020
2021
2022
2023
2024
2025