Lesson 12: Time Series Basics

Data Science with Python – BSc Course

45 Minutes

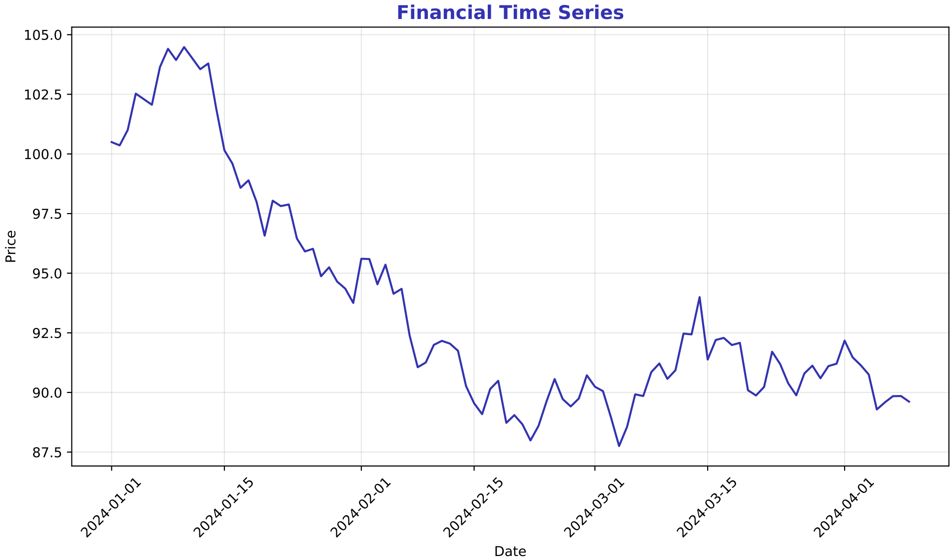
Learning Objectives

After this lesson, you will be able to:

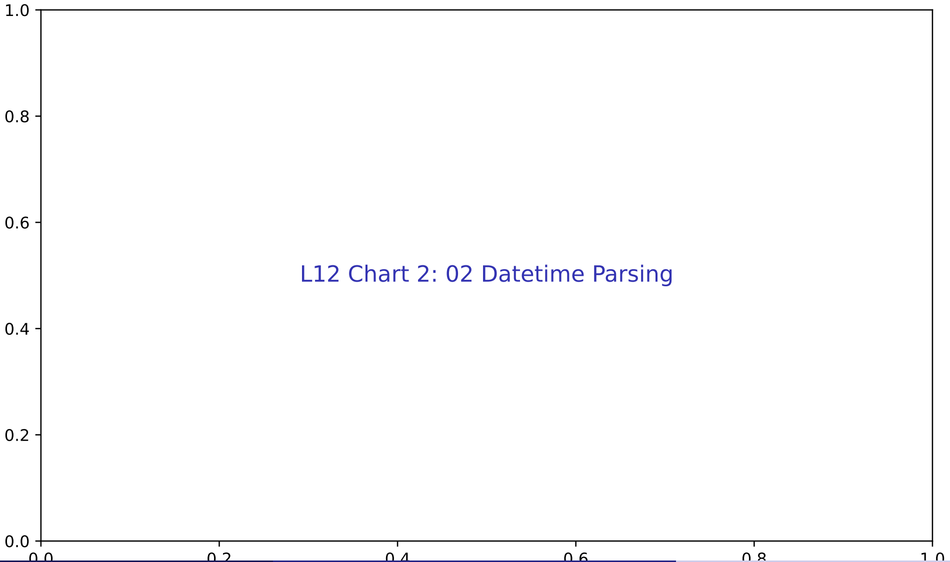
- DateTime index
- Resampling (daily to monthly)
- Rolling windows
- shift() and pct$_c hange()$

- Time series patterns in finance

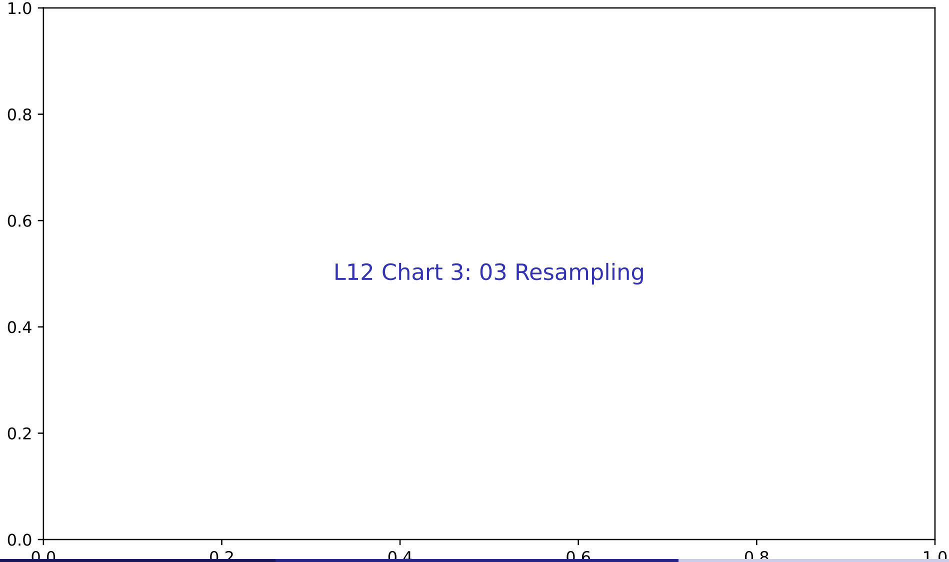
Finance application: Stock data processing and analysis

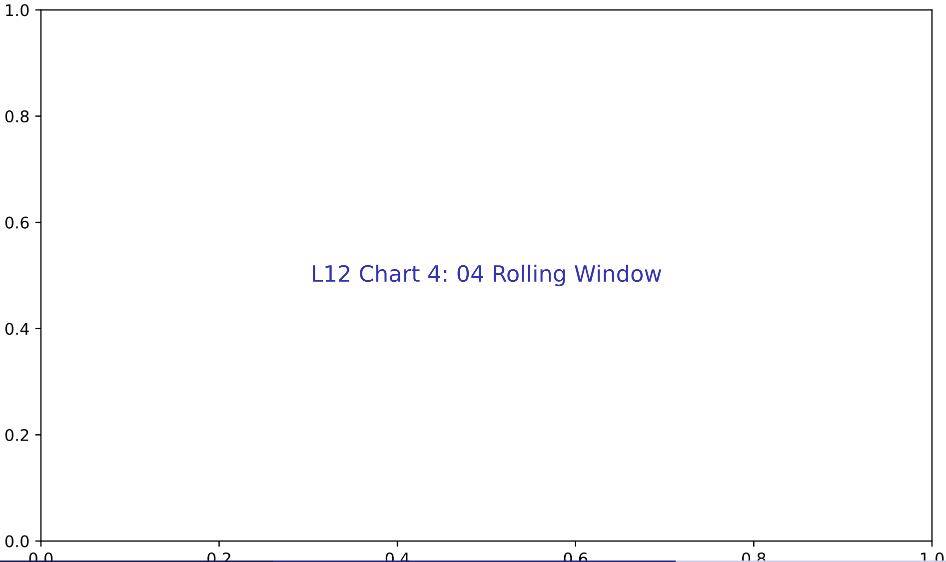

Financial Time Series
Price
Date
105.0
102.5
100.0
97.5
95.0
92.5
90.0
87.5
2024-01-01
2024-01-15
2024-02-01
2024-02-15
2024-03-01
2024-03-15
2024-04-01

Datetime Parsing

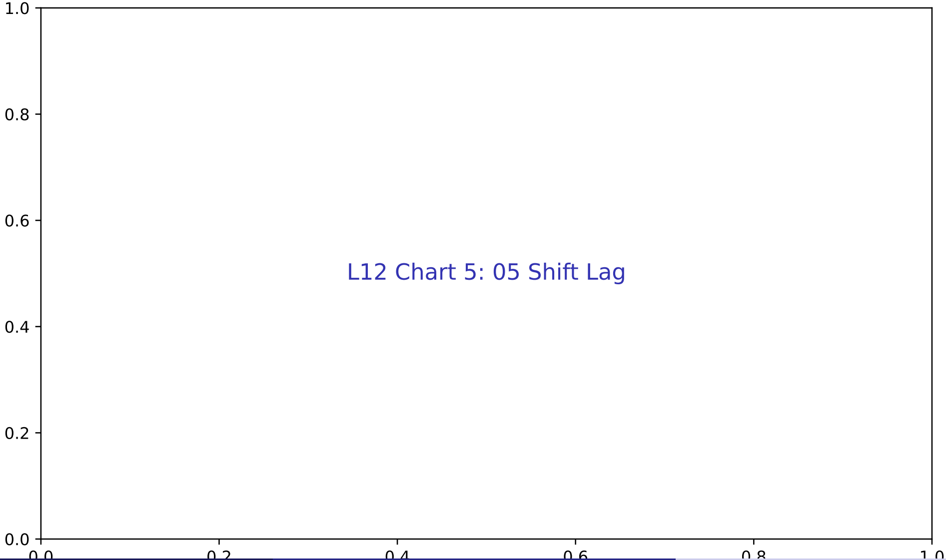


03 Resampling

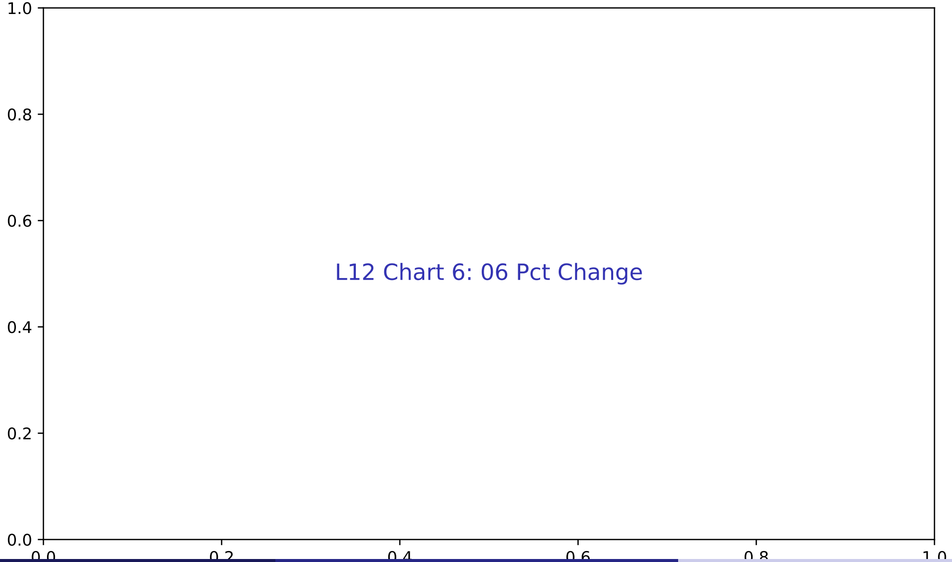



1.0
0.8
0.6
0.4
0.2
0.0
L12 Chart 4: 04 Rolling Window
0.0
0.2
0.4
0.6
0.8
1.0

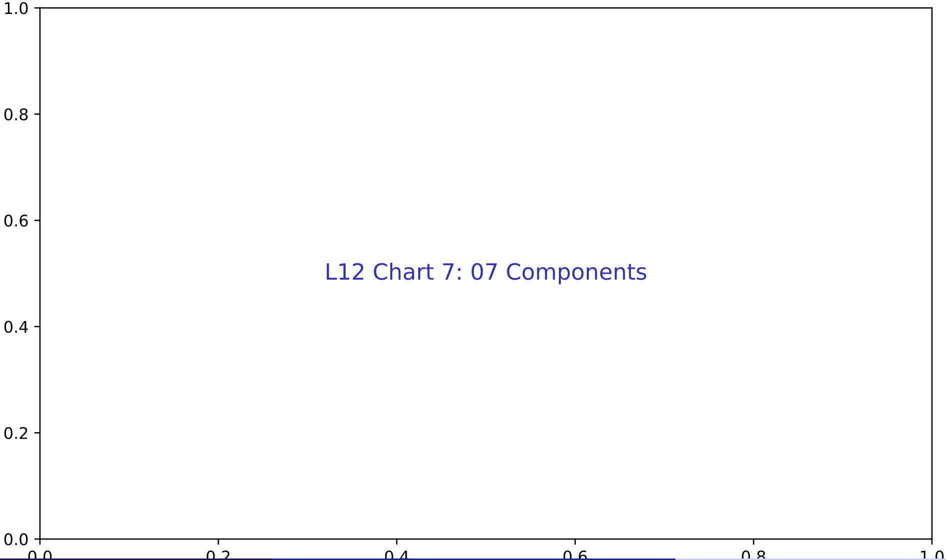
05 Shift Lag



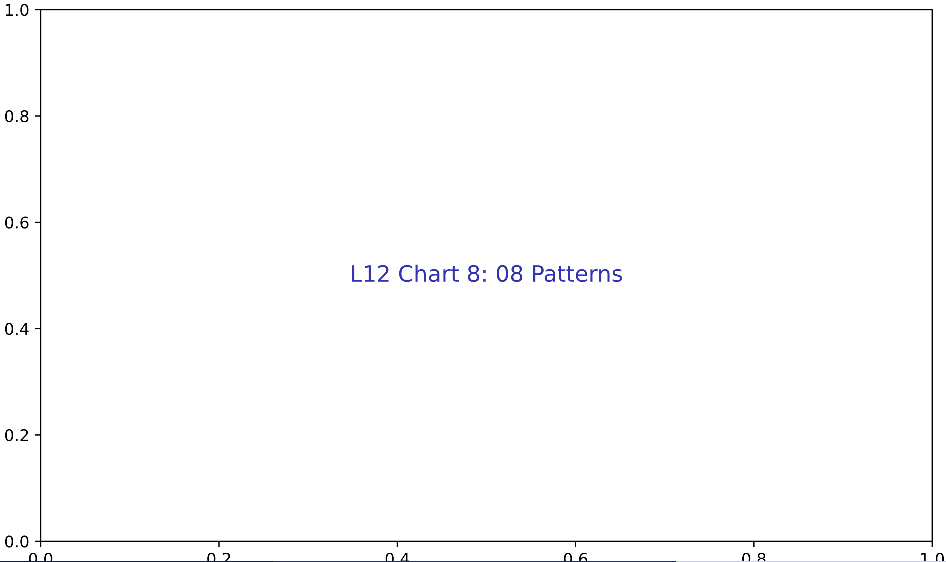
06 Pct Change



07 Components



08 Patterns



Lesson Summary

Key Takeaways:

- DateTime index
- Resampling (daily to monthly)
- Rolling windows
- shift() and pct$_c hange()$

- Time series patterns in finance

Practice: Apply these concepts to the stock price dataset.