YIELD-CURVE PREDICTOR

Machine Learning–Driven Analysis of U.S. Treasury Yields

Understanding Interest Rates, Economic Signals, and Real-World Impact

WHAT ARE INTEREST RATES ?

- An interest rate is the cost of borrowing money or the return earned on savings

- It reflects:
  - Time value of money
  - Inflation expectations
  - Risk and economic conditions

- Central banks influence short-term interest rates through monetary policy

WHAT ARE U.S. TREASURY SECURITIES AND THEIR YIELDS

U.S. Treasury Securities and Their Yields

- Issued by the U.S. government
- Considered the benchmark “risk-free” instruments
- Yield = return investors demand for lending money to the government

Different Maturities Reflect Different Signals:

- Short-term (1M, 3M): monetary policy expectations
- Long-term (10Y, 30Y): growth and inflation expectations

➡️ Together, these yields form the Yield Curve

WHY BUILD A YIELD CURVE PREDICTOR ?

- The yield curve is a powerful economic indicator
- Yield curve inversions often precede recessions
- Traditional models:
  - Assume linear relationships
  - Struggle during regime changes
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Project Motivation:

- Use machine learning to:
  - Capture non-linear dynamics
  - Adapt to changing economic regimes
  - Provide interpretable financial insights

WHY INTEREST RATES MATTER TO EVERYONE ?

Impact on Individuals

- Home loans and mortgage EMIs
- Savings account returns
- Inflation and purchasing power

Impact on Businesses

- Cost of borrowing
- Investment and expansion decisions

Impact on the Economy

- Economic growth or slowdown
- Financial stability and recession risk

Interest rates affect everyone — not just banks and investors.

CONCLUSION

- *The yield curve summarizes market expectations about the economy*
- *Machine learning helps model complex interest rate dynamics*
- *This project connects:*
  - *Finance theory*
  - *Data science*
  - *Real-world economic impact*

Understanding the yield curve is essential to understanding the economy itself.

THANKYOU !