**✅ Current Implementation**

* **Regime Detection  
  Identified market regimes (Bullish, Bearish, Volatile, Neutral) using historical price and volatility behavior.**
* **Markov + Machine Learning Forecasting  
  Forecasts future Nifty50 regimes using a combination of Markov Chains and ML-based models.**
* **Technical Indicators + Price Action  
  Computed key indicators (EMA, RSI, MACD, ATR, Donchian, etc.) and price action patterns for each stock.**
* **Integrated Dataset  
  Merged stock-level data with Nifty50's regime labels and forecasts, including Nifty50 closing prices — enabling regime-aware strategy development.**
* **Strategy: Donchian Pullback (50% Midline)  
  Entry on pullback to Donchian midline (±2%) in bullish regimes, using a 2:1 risk-reward bracket.  
  ✅ Backtest completed and validated.**

**🧩 Planned Features & Next Steps**

**📊 Backtesting Framework**

* **Build a modular backtesting engine to evaluate multiple strategies.**
* **Support manual walk-forward validation using the integrated dataset.**

**📈 Stock Behavior vs Regimes**

* **Analyze each stock’s historical performance across different Nifty50 regimes.**
* **Generate metrics like:**
  + **Average return per regime**
  + **Win rate per regime**
  + **Volatility alignment**
  + **Regime sensitivity scoring**

**⚙️ Strategy Expansion**

* **Finalize and test new trading strategies.**
* **Build variants of existing strategies (e.g., Donchian + Candlestick confirmation).**
* **Develop regime-aware filters (e.g., avoid trading in “volatile” forecasts).**

**🧠 Hybrid Trading Logic**

* **Trade with more conviction when:**
  + **Current regime = bullish**
  + **Forecasted regime = bullish for next few days**
* **Reduce size or skip trades in uncertain or conflicting regime states.**
* **Build rules for confidence-weighted decision-making.**

**✅ What’s Next?**

1. **📊 Map Best Strategies to Market Regimes**
   * Choose the **best trading strategy** based on the **current detected regime**.
   * Example:
     + **Bullish Market** → Trend-following (Moving Averages, Breakouts)
     + **Bearish Market** → Short-selling, Buying Put Options
     + **High Volatility Market** → Options Trading (Straddles, Strangles)
     + **Mean Reversion Market** → Bollinger Bands, RSI Pullbacks
   * You already have a **detailed mapping** in your document.
2. **📈 Combine Predictions with Market Regime**
   * **How much should you rely on Markov Chain prediction vs. current market regime?**
   * **Hybrid Approach:**
     + If **Markov predicts the same as the current regime**, trade with **full confidence**.
     + If **Markov prediction contradicts the current regime**, reduce position size or wait for confirmation.
   * Example:
     + **Current Regime: Bullish** | **Markov Prediction: Bearish Tomorrow**  
       → Trade cautiously (Use hedges or wait for confirmation).
     + **Current Regime: Bearish** | **Markov Prediction: Bearish Tomorrow**  
       → Trade aggressively (Short sell, Buy Put Options).
3. **📌 Develop Execution Plan**
   * Set **entry & exit criteria** for each strategy.
   * Apply **risk management (stop-loss, trailing SL, profit booking).**
   * Example Execution Plan:
     + **Trend Following (Bullish Market)**
       - Buy when **price pulls back to 50EMA** and **MACD is positive**.
       - Exit at **previous resistance** or **Trailing Stop-loss**.
     + **Short Selling (Bearish Market)**
       - Short when **price rallies into resistance** and **RSI < 50**.
       - Exit when price drops **5-10% or MACD shows divergence**.
4. **📉 Backtest & Optimize Strategies**
   * Test **each strategy** on **historical data**.
   * Evaluate:
     + **Win Rate (%)**
     + **Risk-Reward Ratio**
     + **Max Drawdown**
     + **Profit Factor**
   * Optimize parameters (e.g., moving average lengths, stop-loss levels).
5. **🛠 Automate Execution (API Integration)**
   * Automate trade execution with **Zerodha Kite API / Interactive Brokers**.
   * Use a **dashboard** to monitor:
     + Live Market Regime
     + Next-Day Prediction
     + Suggested Trading Strategy
     + Real-time P&L