NIFTY Option Screener

Complete Documentation

Data Sources & ML Analysis Features

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SUMMARY
7 Data Sources | 25+ ML Features | 23 Technical Indicators | 8 Alert Types

PART 1: DATA SOURCES (7 Total)

#	Source	Data Provided	Method
1	Dhan API	OHLC, Spot Price, Option Chain, Market Depth	REST API
2	Yahoo Finance	Fallback OHLC, Global indices data	yfinance
3	NSE Participant	FII/DII/PRO/CLIENT positions	Web scraping
4	Option Chain	OI, Volume, Greeks, IV, Premiums	Dhan API
5	Market Depth	5-level bid/ask, Order quantities	Dhan API
6	Perplexity AI	Real-time market insights	AI API
7	NewsData	Market news and events	NewsData API

1.1 Dhan API Data Fetcher

File: dhan_data_fetcher.py

* OHLC Data: Real-time quotes for Nifty, Sensex, BankNifty, FinnIfty, MidcpNifty
* Intraday Charts: 1, 5, 15, 25, 60-minute candle data
* Option Chain: Full chain with Greeks (Delta, Gamma, Theta, Vega)
* Rate Limits: Quote=1/sec, Data=5/sec, Option Chain=1/3sec

1.2 FII/DII Participant Data

File: src/fii_dii_fetcher.py

* FII (Foreign Institutional Investors) positions
* DII (Domestic Institutional Investors) positions
* PRO (Proprietary Traders) and CLIENT (Retail) positions
* Index Futures/Options Long/Short, Net OI changes

PART 2: ML/ANALYSIS FEATURES (25+ Systems)

A. Market Regime Detection

Feature	Algorithm	Output
ML Market Regime	XGBoost-style feature engineering	Trending Up/Down, Range Bound, Volatile
Volatility Regime	VIX percentile + ATR analysis	Low/Normal/High/Extreme volatility

B. Institutional Detection (Diamond Level)

Feature	Detection Method	Output
SL Hunt Detector	4-layer: OI, Volume, Clusters, Time	Hunt probability 0-100%
Block Trade Detector	Volume spike, OI jump, Sweep patterns	Accumulating/Distributing
Institutional vs Retail	Volume signatures, OI patterns	Smart money detected Y/N
Black Order Detector	Hidden/Iceberg order detection	Activity level

C. Option Greeks Analysis

Feature	Algorithm	Output
Gamma Wall Flip	Black-Scholes GEX calculation	Positive/Negative regime, flip signals
OI Trap Detection	OI change pattern analysis	Trap type, probability, direction
ATM Bias Analyzer	12-dimension composite analysis	Bullish/Bearish/Neutral bias

D. Order Flow Analysis

Feature	Method	Output
Cumulative Delta (CVD)	Delta accumulation + divergence	Bullish/Bearish, divergence alerts
Market Depth Analysis	Bid/Ask imbalance, spoof detection	Liquidity profile, hidden orders

E. XGBoost ML System

File: src/xgboost_ml_analyzer.py

Component	Function	Details
XGBoost Analyzer	70+ features input	BUY/SELL/HOLD with probability
ML Data Collector	Records trading signals	Tracks outcomes at 5/15/30/60min
ML Real Trainer	Trains on actual results	Cross-validation, feature importance
ML Backtester	Validates strategy	Win rate, profit factor, drawdown

PART 3: TECHNICAL INDICATORS (23 Total)

Bias Analysis Pro (13 Indicators)

File: bias_analysis.py

* RSI (Relative Strength Index)
* MACD (Moving Average Convergence Divergence)
* Stochastic Oscillator
* Bollinger Bands
* ADX (Average Directional Index)
* CCI (Commodity Channel Index)
* Williams %R
* Volume Rate of Change
* Price Rate of Change
* Moving Average Crossovers
* Fibonacci Retracement Levels
* Pivot Points
* ATR (Average True Range)

Advanced Indicators (10 Systems)

Folder: indicators/

* Volume Order Blocks (VOB) - High-volume price levels
* HTF Support/Resistance - Multi-timeframe S/R
* HTF Volume Footprint - Volume distribution at price levels
* Ultimate RSI - Enhanced multi-timeframe RSI
* OM Indicator - Comprehensive order flow
* Liquidity Sentiment Profile - Fair value gaps (FVG)
* Money Flow Profile - Volume-weighted price levels
* DeltaFlow Volume Profile - Delta per price level
* Reversal Probability Zones - Swing pattern analysis
* Advanced Price Action - BOS, CHOCH, Fibonacci

ATM Bias Analyzer (12 Metrics)

* 1. OI Bias (Call vs Put OI)
* 2. Change in OI Bias
* 3. Volume Bias (Call vs Put Volume)
* 4. Delta Bias (Net Delta Position)
* 5. Gamma Bias (Net Gamma Position)
* 6. Premium Bias
* 7. IV Bias (Call IV vs Put IV)
* 8. Delta Exposure Bias
* 9. Gamma Exposure Bias
* 10. IV Skew Bias
* 11. OI Change Acceleration Bias
* 12. Volume x IV x OI Combined Bias

PART 4: SMART ALERT SYSTEM (8 Alert Types)

File: src/smart_alert_system.py

Alert Type	Trigger Condition	Priority
Price Alerts	Spot crosses upper/lower bounds, S/R proximity	HIGH
OI Alerts	Large OI buildups or breakdowns detected	MEDIUM
Gamma Flip	GEX flips positive to negative or vice versa	HIGH
CVD Divergence	Order flow diverges from price action	MEDIUM
Block Trade	Large institutional trade detected	HIGH
SL Hunt	Stop-loss hunt trap identified	HIGH
Expiry Day	Special conditions on expiry day	MEDIUM
FII/DII Change	Significant institutional position changes	LOW

Features: Telegram integration, 5-minute cooldown, duplicate prevention, priority notifications

PART 5: UNIFIED ML TRADING SIGNAL

File: src/unified_ml_signal.py

Combines ALL 12 modules into a single trading signal:

* 1. ML Market Regime Detection
* 2. XGBoost Prediction (BUY/SELL/HOLD)
* 3. Volatility Regime Analysis
* 4. OI Trap Detection
* 5. CVD Delta Imbalance
* 6. Liquidity Gravity Analysis
* 7. Institutional vs Retail Detection
* 8. Expiry Day Killer (False Breakout Filter)
* 9. SL Hunt Detector
* 10. Block Trade Detector
* 11. Gamma Wall Flip
* 12. FII/DII Detection

OUTPUT: Single BUY/SELL/HOLD signal with confidence percentage

SUMMARY

Category	Count	Details
Data Sources	7	Dhan API, Yahoo Finance, NSE, Perplexity AI, NewsData
ML/Analysis Features	25+	Regime detection, institutional tracking, order flow
Technical Indicators	23	Bias Analysis Pro (13) + Advanced Indicators (10)
Alert Types	8	Price, OI, Gamma, CVD, Block, SL Hunt, Expiry, FII/DII
ATM Bias Metrics	12	OI, Volume, Delta, Gamma, IV, Premium, Skew
XGBoost Features	70+	All modules combined for ML prediction

All components work together as a unified trading signal system
for NIFTY 50 options trading with institutional-level analysis!