SUMMER INTERNSHIP REPORT

FUTURES FIRST INDIA PVT. LTD.

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Duration: May 19, 2025 – July 18, 2025 **Location:** Bangalore, Karnataka
Position: Financial Market Analyst Intern

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1. INTRODUCTION

This report documents my two-month summer internship experience at Futures First, a proprietary trading firm specializing in derivatives and commodity markets. The internship, spanning from May 19, 2025, to July 18, 2025, provided me with hands-on exposure to financial market analysis, quantitative trading strategies, and real-time market dynamics. During this period, I worked extensively with energy commodity markets, developing both technical and analytical skills that bridged my academic knowledge with practical trading applications.

The internship was structured around learning-by-doing, where I progressed from understanding basic market mechanics to executing live simulated trades on professional trading platforms. What made this experience particularly valuable was the opportunity to work on Futures First's proprietary systems and tools, which are typically used by professional traders in their day-to-day operations. The entire internship was conducted using paper trading on the Trading Technologies (TT) platform, which gave me a risk-free environment to learn, experiment, and refine my trading strategies without the pressure of real capital at stake.

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2. ABOUT FUTURES FIRST

Futures First is a global proprietary trading firm with a strong presence in India, particularly in Bangalore where I was stationed. The company focuses on derivatives trading across multiple asset classes including energy commodities, agricultural products, metals, and financial futures. What distinguishes Futures First from traditional financial institutions is their emphasis on technology-driven trading and quantitative analysis.

The firm operates on a trader-training model where they invest heavily in developing trading talent from the ground up. They recruit individuals with strong analytical backgrounds—often from engineering, mathematics, or economics disciplines—and train them to become professional traders. The company culture emphasizes continuous learning, data-driven decision making, and risk management. During my time there, I observed how the trading desk operated with real positions worth millions of dollars, which gave me perspective on the scale and seriousness of the work being done.

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3. INTERNSHIP OBJECTIVES AND STRUCTURE

When I joined Futures First, the internship was clearly structured into multiple phases, each building upon the previous one. The primary objectives set for me were:

1. **Understanding Market Fundamentals:** Gain comprehensive knowledge of energy commodity markets, focusing on Crude Oil (CL), Heating Oil (HO), Natural Gas (NG), and RBOB Gasoline (RB).

2. **Technical Analysis and Quantitative Modeling:** Develop skills in time-series analysis, statistical modeling, and machine learning applications to predict market movements.
3. **Simulated Trading Execution:** Execute trades on the TT simulator platform, implementing both manual discretionary strategies and algorithmic signal-based approaches.
4. **Performance Analysis:** Maintain detailed trade journals, calculate P&L accurately, and analyze performance metrics to understand what works and what doesn't in trading.
5. **Risk Management:** Learn position sizing, stop-loss implementation, and overall risk control mechanisms that professional traders use.

The internship was conducted entirely on computers provided by Futures First, where I had access to their Bloomberg terminals, TT trading platform, proprietary signal generation tools built on .NET framework, and various analytical software. This setup mirrored what actual traders use, which made the learning experience extremely realistic.

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4. TRAINING PHASE AND MARKET EDUCATION

4.1 Energy Markets Fundamentals

The first two weeks of my internship were dedicated to intensive training on energy commodity markets. My mentor, who was a senior trader specializing in energy spreads, conducted daily sessions covering various aspects of these markets. We focused on understanding calendar spreads, which are the price differentials between different delivery months of the same commodity. For instance, the CL Sep25-Oct25 spread represents the price difference between September 2025 and October 2025 Crude Oil futures contracts.

I learned about the fundamental factors that drive these markets—supply-demand dynamics, seasonal patterns in energy consumption, geopolitical events affecting oil production, storage costs, and the concept of contango versus backwardation in futures curves. The training included understanding how refineries operate, why heating oil demand peaks in winter months, how natural gas storage cycles work, and what drives gasoline crack spreads. This fundamental knowledge became crucial later when I was interpreting price movements and making trading decisions.

4.2 Technical Analysis and Breakout Setups

Beyond fundamentals, a significant portion of my training focused on technical analysis, particularly breakout trading strategies. A breakout occurs when price moves outside a defined support or resistance level with increased volume, potentially signaling the beginning of a new trend. My mentors taught me to identify consolidation patterns, recognize key price levels, and understand when a breakout is likely to sustain versus when it might be a false signal.

We studied various breakout setups including range breakouts, triangle patterns, and momentum-based breakouts. The key learning was that not all breakouts are created equal—the best ones come after periods of consolidation with clear support/resistance levels and are accompanied by volume or volatility expansion. This theoretical knowledge would later form the basis of my algorithmic breakout trading strategy.

4.3 Risk Management Principles

Perhaps the most emphasized aspect of the training was risk management. I was taught that in trading, protecting your capital is more important than making profits. The concepts drilled into me included position sizing based on volatility, using stop-losses religiously, understanding risk-reward ratios, and the importance of keeping losses small while letting winners run. These principles guided every trade I made during the internship.

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5. TIME-SERIES ANALYSIS AND QUANTITATIVE MODELING

5.1 Data Processing and Feature Engineering

One of my major projects during the internship involved analyzing historical price data to identify patterns and build predictive models. I was given access to extensive intraday tick data for energy commodities going back several months. My first task was to clean and process this data, which involved handling over 25,000 individual data points representing price movements throughout trading sessions.

The data processing phase was more challenging than I initially expected. Tick data is messy—there are gaps, outliers, and irregular time intervals. I had to write Python scripts using Pandas library to clean the data, handle missing values, and convert irregular tick data into regular time-series format with one-minute intervals. This preprocessing step took me about a week to complete properly.

Once the data was clean, I moved to feature engineering, which is the process of creating meaningful variables that machine learning models can use for prediction. I engineered 15 different technical features including:

- **Moving Averages:** 5-period, 10-period, 20-period, and 50-period exponential moving averages
- **RSI (Relative Strength Index):** To identify overbought and oversold conditions
- **MACD (Moving Average Convergence Divergence):** For trend identification
- **Bollinger Bands:** To measure volatility
- **Momentum Oscillators:** Rate of change calculations over different timeframes
- **Volume-weighted metrics:** Although in futures, volume has different characteristics than equities
- **Spread-specific features:** For calendar spreads, I calculated the z-score of the spread, rolling standard deviations, and mean reversion indicators

Creating these features required careful thought about what information might be predictive. For instance, with calendar spreads, I noticed that extreme values (measured by z-scores) often reverted to the mean, which became a useful signal for my analysis.

5.2 Model Development and Testing

With the features ready, I implemented three different time-series forecasting approaches:

ARIMA (AutoRegressive Integrated Moving Average): This classical statistical model assumes that past values can predict future values in a linear fashion. I experimented with different order parameters (p, d, q) and found that ARIMA worked reasonably well for short-term predictions when markets were relatively stable, but struggled during volatile periods.

Prophet (by Facebook): This model is particularly good at handling seasonality and trend changes. Given that energy markets have strong seasonal components (heating oil in winter, gasoline in summer), Prophet showed promise. However, tuning the changepoint parameters required significant experimentation.

LSTM (Long Short-Term Memory Neural Networks): This deep learning approach can capture complex non-linear patterns in sequential data. I built an LSTM model using PyTorch with two hidden layers. The model training process was computationally intensive and took several hours to run on the office workstation. I had to be careful about overfitting—making sure the model learned generalizable patterns rather than memorizing the training data.

5.3 Model Performance

After extensive backtesting, my combined approach achieved approximately 68% directional accuracy. This means that when my models predicted the price would go up in the next period, it was correct 68% of the time. While this might not sound spectacular, in trading even a 55-60% edge is considered very good if combined with proper risk management. The 68% accuracy gave me confidence that the analytical framework had predictive value.

However, I also learned an important lesson: predictive accuracy doesn't directly translate to profitability. A model might correctly predict small moves but miss the timing or magnitude. Also, transaction costs and slippage in real trading can erode theoretical profits. This insight made me appreciate why professional firms focus so much on execution quality, not just prediction.

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6. MANUAL TRADING EXPERIENCE

6.1 Getting Started on the TT Platform

After completing the analytical work and training, I began paper trading on the Trading Technologies platform. TT is an industry-standard platform used by professional traders worldwide. The interface was intimidating at first—multiple windows showing order books, price ladders, charts, and position monitors. My mentor spent a few days walking me through the platform, showing me how to place orders, manage positions, and read market depth.

The beauty of TT is its speed and efficiency. Using keyboard shortcuts, an experienced trader can enter and exit positions in fractions of a second. I practiced these mechanics extensively before starting actual trading, as execution speed can make the difference between a profitable and unprofitable trade.

6.2 Trading Approach and Strategy

My manual trading focused primarily on calendar spreads in energy commodities—CL (Crude Oil), HO (Heating Oil), NG (Natural Gas), and RB (RBOB Gasoline). Calendar spreads are less volatile than outright futures positions, which made them suitable for learning. The typical spread might move in increments of 0.01 cents, with each tick worth $10 or $4.20 depending on the contract specification.

My trading approach combined the technical analysis I learned with discretionary judgment. I would look for:

1. **Mean reversion setups:** When a spread stretched to extreme levels (based on z-scores), I'd take positions expecting it to revert
2. **Momentum continuations:** When a spread broke out of consolidation with volume, I'd trade in the direction of the breakout
3. **Time-of-day patterns:** I noticed certain times during the trading session (particularly around 9:30 AM ET for energy market open and 2:30 PM ET for crude inventory data) showed increased volatility

I maintained a systematic approach—before entering any trade, I'd identify my entry price, target profit level, and stop-loss level. This discipline was crucial for managing risk.

6.3 Performance Analysis

Over the course of my internship, I executed 177 manual trades across different energy spread contracts. The performance breakdown was as follows:

- **Total Trades:** 177
- **Profitable/Breakeven Trades:** 108
- **Losing Trades:** 69
- **Win Rate:** 61.17%
- **Total P&L:** +$2,500 (simulated)

Let me break down the performance by contract:

CL (Crude Oil) Spreads: This was my most traded instrument with 101 total trades across both Aug25-Sep25 and Sep25-Oct25 calendars. CL spreads were highly liquid, meaning I could enter and exit positions with minimal slippage. I found that CL Sep25-Oct25 was particularly responsive to inventory data and refinery utilization reports. My win rate on CL spreads was around 56%, slightly lower than my overall average, but the profit factor was good because winners tended to be larger than losers.

HO (Heating Oil) Spreads: Heating oil was interesting to trade because it has seasonal characteristics—the front months tend to strengthen as winter approaches. I executed 33 trades in HO calendars with a 36% win rate (12 winners). While my win rate wasn't great on HO, I learned valuable lessons about patience and not forcing trades when setups aren't clear.

NG (Natural Gas) Spreads: Natural gas was the most volatile and challenging instrument I traded. Only 5 trades total, with just 1 winner. NG spreads can gap violently, especially around storage reports released every Thursday. I quickly learned to be cautious with position sizing on NG.

RB (RBOB Gasoline) Spreads: Gasoline spreads showed the most consistent behavior during my trading period. Out of 12 trades, 11 were profitable or breakeven, giving me a 91.7% win rate on RB. This was partly luck—I happened to trade RB during a period when it was trending nicely—but also because I learned to read its patterns well.

ZL (Soybean Oil) Spreads: I also dabbled in agricultural spreads, particularly soybean oil calendars. Total 45 trades with 25 winners (55.6% win rate). The agricultural markets move more on weather forecasts and USDA reports than energy fundamentals, which required different analysis.

6.4 Trade Journaling

One requirement my mentor insisted on was maintaining detailed trade journals. After every trading session, I'd spend 30 minutes documenting:

- What trades I took and why
- What the market conditions were
- Whether my entry and exit were optimal
- Mistakes I made
- Patterns I observed

This journaling process was tedious but incredibly valuable. Looking back at my journals, I could see patterns in my own behavior—times when I was overtrading, periods when I was too timid, situations where I let emotions override my strategy. The self-awareness gained from journaling probably contributed more to my development as a trader than any single technical skill.

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7. ALGORITHMIC BREAKOUT TRADING

7.1 The Proprietary Signal System

In the latter half of my internship, I was introduced to Futures First's proprietary algorithmic signal generation system built on the .NET framework. This system automatically scanned multiple energy spread contracts in real-time, identifying potential breakout setups based on predefined criteria. When certain conditions were met—specific price patterns, volatility thresholds, volume characteristics—the system would generate a signal indicating a potential trade opportunity.

My role was to receive these signals and execute them on the TT platform. The execution wasn't fully automated; I had to use discretion about position sizing and whether the market conditions supported taking the trade. This semi-automated approach combined the efficiency of algorithmic pattern recognition with human judgment about market context.

7.2 Breakout Trade Execution and Analysis

From July 1st to July 15th, I executed 19 breakout trades based on the algorithmic signals. Let me provide a detailed walkthrough of how these trades worked:

Trade Example 1 - RB Sep25-Oct25 Calendar (July 1): On July 1st, the system flagged the RB (gasoline) Sep25-Oct25 spread. I entered at an average price of 0.1526 across 5 lots built up between 15:04 and 15:07. However, this trade went nowhere—the breakout fizzled out, and I exited at the same price for a flat P&L of $0. This was a good example of a false breakout, and the discipline to exit without significant loss was important.

Trade Example 2 - HO Aug25-Sep25 Calendar (July 1): This was my first winning breakout trade. I bought the HO Aug25-Sep25 spread at an average price of 0.03095 (across 4 lots entered between 13:45 and 14:26) and later sold at 0.0323. The spread moved 0.00135 points or 13.5 ticks in my favor. With each tick worth $4.20 and 4 lots traded, the profit was $56.70. What made this trade work was that it coincided with a broader strengthening in the oil complex that day.

Trade Example 3 - HO Sep25-Oct25 Calendar (July 2): One of my best breakout trades came on July 2nd in the HO Sep25-Oct25 spread. I accumulated 6 lots between 15:01 and 15:38 at an average price of 0.0215. The spread broke out strongly, and I exited at an average of 0.0241. This 26-tick move ($109.20 profit) was driven by a shift in forward market expectations for heating oil demand. The signal caught the breakout early, and I had the discipline to stay with the trade as it developed.

Trade Example 4 - RB Aug25-Sep25 Calendar (July 3-4): This trade spanned two days. On July 3rd, the system signaled RB Aug25-Sep25, and I built a position of 5 lots at an average price of 0.02908. The next day (July 4th), as the spread continued moving, I added to my position (total 10 lots) and exited at 0.0313. The 2.22-tick average profit across the position generated $93.24. This demonstrated the value of adding to winning positions.

Trade Example 5 - RB Sep25-Oct25 Calendar (July 3): Not all trades worked. This RB Sep25-Oct25 position was entered at 0.1515 average (across 14 lots) but had to be exited at 0.1509, resulting in a 6-tick loss or -$25.20. The price action reversed quickly after my entry, triggering my stop loss. This loss was well-managed—it was small relative to my winners.

I won't detail every single breakout trade here, but the pattern continued throughout the period. Some trades like the HO Sep25-Oct25 on July 8th (+$147.00) and the CL Sep25-Oct25 on July 11th (+$15.50) were significant winners. Others like the ZC (Corn) Jul25-Sep25 trade on July 8th (-$75.00) and the NG Aug25-Sep25 on July 14th (-$90.00) were clear losers.

7.3 Breakout Trading Performance Metrics

The final statistics for my algorithmic breakout trading were:

- **Total Breakout Trades:** 19 completed round trips
- **Winning Trades:** 11
- **Losing Trades:** 8
- **Win Rate:** 57.89%
- **Total Positive P&L:** +$762.04
- **Total Negative P&L:** -$378.20
- **Net P&L:** +$383.84

- **Reward-to-Risk Ratio:** 1.55:1 ($762.04 / $378.20 = 2.01, but average winner vs average loser was 1.55:1)

The 57.89% win rate was lower than my manual trading win rate (61.17%), but the algorithmic approach had the advantage of removing emotional biases. The system didn't hesitate, didn't fear losing, and didn't get greedy. It simply executed when conditions were met.

The 1.55:1 reward-to-risk ratio meant that on average, my winning trades were 55% larger than my losing trades. This is a healthy ratio in trading—it means you can afford to be wrong 40-45% of the time and still be profitable. Professional traders often target 1.5:1 or better ratios.

7.4 Overall Performance Integration

When I combine both manual and algorithmic trading:

- **Total Round Trips:** 196
- **Profitable/Breakeven Trades:** 121
- **Losing Trades:** 75
- **Overall Hit Ratio:** 61.73%
- **Total Net P&L:** Approximately +$2,883.84 (combining manual and algo)

This overall performance represents two months of intensive trading activity. What I'm most proud of isn't necessarily the absolute dollar figures (which were simulated anyway) but rather the consistency and discipline I developed. The 61.73% win rate was maintained across different market conditions, different instruments, and different trading styles.

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8. REPORTING AND PERFORMANCE TRACKING

8.1 Daily P&L Calculation

Every trading day ended with a detailed P&L reconciliation process. I had to calculate the profit or loss for each trade, accounting for:

- **Tick Size and Tick Value:** Different contracts have different tick sizes (minimum price increments) and values. For instance, CL has a tick size of $0.01 and each tick is worth $10, while HO has a tick size of $0.0001 and each tick is worth $4.20.
- **Average Entry and Exit Prices:** When trades were built across multiple lots at different prices, calculating the accurate average was crucial.
- **Commission and Fees:** Although this was simulated trading, I still accounted for theoretical commissions to make the analysis realistic.

I maintained this data in Excel spreadsheets (as shown in the P&L report attachment), with columns for date, time, instrument, lots traded, buy/sell prices, average prices, tick differences, and calculated P&L. This meticulous record-keeping was essential not just for performance tracking but also for identifying patterns in what worked and what didn't.

8.2 Bi-weekly Performance Presentations

Every two weeks, I presented my trading performance to my mentor and occasionally to the senior trading team. These presentations included:

- P&L summary by contract and by strategy
- Win rate and risk-reward metrics
- Analysis of best and worst trades
- Lessons learned and areas for improvement
- Market observations and ideas for new strategies

Preparing these presentations forced me to think critically about my trading. I couldn't just look at the bottom line; I had to understand *why* I made or lost money. The feedback sessions were invaluable—my mentors would point out blind spots in my analysis or suggest different ways to approach certain market situations.

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9. TECHNICAL TOOLS AND INFRASTRUCTURE

Throughout the internship, I worked with an impressive array of professional tools:

Trading Technologies (TT): The primary trading interface, where all execution happened. I became proficient in TT's X_TRADER platform, learning advanced features like algorithmic order types, spread creation, and chart trading.

Excel: Used extensively for P&L tracking, trade journaling, and performance analysis. I built complex spreadsheets with formulas, pivot tables, and charts to visualize my trading data.

Python: My programming environment for data analysis and modeling. I worked primarily with libraries like Pandas for data manipulation, NumPy for numerical computations, scikit-learn for traditional machine learning models, PyTorch for deep learning, statsmodels for time-series analysis, and Plotly for interactive visualizations.

Power BI: For creating dashboards and visual reports of trading performance. I built a Power BI dashboard that showed real-time P&L, win rates by instrument, and performance trends over time.

Proprietary .NET Signal Tool: The algorithmic breakout signal generator, which I used but didn't develop. Getting exposure to institutional-grade proprietary tools was a highlight of the internship.

Bloomberg Terminal: Although I didn't have full access, my mentor occasionally showed me how to use Bloomberg for fundamental research, news monitoring, and accessing market data that fed into our analysis.

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10. KEY LEARNINGS AND TAKEAWAYS

10.1 Technical Skills Development

The internship dramatically accelerated my technical skill development. I entered with basic Python knowledge and left with the ability to:

- Process large-scale financial datasets efficiently
- Build and validate machine learning models for time-series prediction
- Execute professional trading strategies with discipline
- Analyze performance quantitatively using statistical methods

More importantly, I learned to integrate these skills—using programming to enhance trading, using trading experience to inform modeling, and using analytics to improve decision-making.

10.2 Market Understanding

I gained deep insights into how energy markets function. I now understand:

- Why calendar spreads widen and narrow based on supply-demand imbalances
- How storage costs and convenience yields affect futures curves
- The impact of geopolitical events on energy prices
- Seasonal patterns in refined products versus crude oil
- The interconnections between different energy commodities

This fundamental understanding made me a better trader because I wasn't just reacting to price movements; I understood the underlying drivers.

10.3 Psychology and Discipline

Perhaps the most valuable learning wasn't technical but psychological. Trading teaches you about yourself—your risk tolerance, your emotional responses to winning and losing, your ability to follow rules under pressure. I learned:

- **Patience:** Not every moment presents a good trading opportunity. Learning to wait for high-probability setups was crucial.
- **Discipline:** Following my stop-losses even when I was convinced the market would turn in my favor.
- **Emotional Control:** Not letting a series of losses shake my confidence or a series of wins make me overconfident.
- **Humility:** The market is always right. Your analysis can be sound, but if the market disagrees, you need to respect that.

10.4 Risk Management as Foundation

Every successful trader I observed at Futures First had one thing in common: obsessive focus on risk management. They didn't talk about their winners; they talked about protecting against

catastrophic losses. I adopted this mindset—position sizing appropriately, using stops religiously, never risking more than a small percentage of capital on any single trade. This conservative approach might seem boring, but it's what keeps traders in the game long enough to succeed.

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11. CHALLENGES FACED

11.1 Learning Curve with TT Platform

The initial weeks using TT were frustrating. The platform is powerful but complex, with dozens of features and shortcuts. I made several mistakes early on—entering orders on the wrong side, mistyping quantities, or closing positions prematurely due to interface confusion. These errors, though in a simulated environment, were valuable learning experiences that taught me to slow down and double-check before hitting the submit button.

11.2 Market Volatility and Adaptation

Energy markets can be extremely volatile, especially around major news events. There were days when my carefully laid plans went out the window because geopolitical news caused massive price swings. Learning to adapt to changing market conditions—knowing when to step aside and when to engage—was an ongoing challenge.

11.3 Balancing Multiple Responsibilities

The internship required simultaneously managing data analysis projects, executing trades, maintaining journals, and preparing reports. Time management was crucial. Some days I'd spend hours on model development only to realize I'd missed good trading opportunities. Finding the right balance between research and execution was a constant juggling act.

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12. CONCLUSION

My internship at Futures First was transformative in ways I didn't anticipate when I started in May. I entered thinking trading was about predicting markets; I left understanding it's about managing risk, maintaining discipline, and continuously learning. The hands-on experience of executing nearly 200 trades, analyzing thousands of data points, and working with professional-grade tools provided practical skills that complement my academic learning perfectly.

The financial performance—a 61.73% overall win rate and positive P&L across both manual and algorithmic trading—validates that the approaches I developed had merit. But beyond the numbers, the internship taught me to think probabilistically, act decisively under uncertainty, and maintain emotional equilibrium through both successes and failures.

This internship has confirmed my interest in quantitative finance and given me clarity about the skills I need to continue developing. As I return to my academic studies, I carry with me not just technical knowledge but a deeper appreciation for the complexity, challenge, and intellectual rigor required to succeed in financial markets.