Predictions were verified against actual price trends, achieving an overall accuracy of 80%, as shown in Figure 6. The system correctly issued sell signals at indices 0 and 3 during resistance stalls and negative momentum shifts, and buy signals at indices 1, 4, 5, 6, 8, and 9 by detecting early momentum flips, support bounces, and recognizable recovery patterns. Errors at indices 2 and 7 were due to overreliance on incomplete patterns and premature bullish calls, highlighting the model's tendency to prioritize emerging signals. Adjusting these weightings could enhance reliability.

5.3 Case Studies of Agent Reasoning

We present a representative Descending Triangle case study to illustrate PatternAgent's reasoning. Figure 4 illustrates how PatternAgent reasons over bar geometry. In this case, it recognizes a Descending Triangle, producing structured outputs that capture lower highs over flat support, a bearish breakdown bias, and triangular convergence. This example highlights the agent's ability to decompose raw price action into interpretable features. See Appendix F for additional case studies.

6 Conclusion

QuantAgent illustrates how decomposing trading into specialized LLM agents grounded in price data enables accurate, transparent, and risk-aware decisions for high-frequency trading. The multi-agent structure not only enhances interpretability but also promotes robustness through cross-agent validation and specialization. Our results across diverse markets underscore the viability of this approach, suggesting that structured agent collaboration grounded purely in price data can serve as a scalable foundation for future real-time, data-efficient financial systems operating without external sentiment or supervision.

7 Limitations and Future Work

QuantAgent's key constraints center on speed and micro-horizon accuracy. First, its predictive precision drops on ultra-short candles ($\approx$ 1–15 min). The price series at this scale are dominated by noise and rapid regime shifts, making it difficult for the current zero-shot LLM ensemble to separate transient spikes from tradable signals; empirical tests show a sizable degradation in prediction accuracy relative to 30min–4h bars.

Second, the architecture is not truly real-time. Each inference cycle involves an LLM call plus several bound indicator/pattern tools, introducing latencies that can exceed the window in which a 1-minute opportunity remains exploitable. Streamlining tool orchestration, caching intermediate features, or moving critical logic to lighter-weight models on the edge are promising directions to close this gap (Hasbrouck and Saar, 2013).

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