StorePulse

Demand Forecasting Automation Platform using NB-INGARCH Models

MTech Technical Presentation - Complete System Architecture

⚙ Feature Engineering Pipeline

21 features extracted for each prediction day.

Lag Features (6)

- lag_1: Yesterday's visits
- lag_2: 2 days ago
- lag_7: Same day last week
- lag_14: 2 weeks ago
- lag_21: 3 weeks ago
- lag_30: Monthly pattern

Rolling Statistics (4)

- rolling_mean_7: 7-day average
- rolling_std_7: 7-day std dev
- rolling_mean_14: 14-day average
- rolling_std_14: 14-day std dev

Trend Indicators (5)

- pct_change_1: Day-over-day %
- pct_change_7: Week-over-week %
- pct_change_14: 2-week change
- volatility_7: CoV ratio
- trend_strength: Z-score

Temporal Features (6)

- dow: Day of week (0-6)
- is_weekend: Boolean flag
- is_holiday: From calendar
- month: Month number (1-12)
- quarter: Quarter (1-4)
- acceleration: 2nd derivative

Technical Rationale: Research shows that INGARCH models benefit from rich feature sets. We balance predictive power with computational efficiency. Each feature captures a different aspect of retail dynamics (momentum, seasonality, volatility, external events).

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MTech Project | NB-INGARCH Implementation | Verified Metrics

All diagrams, metrics, and architecture details are based on actual implementation