AION Analytics — Day Trading Engine Brainstorm

Overview

Goal: create a parallel "Day Trading Job" that learns and predicts short-term (intraday) patterns separately from the nightly pipeline.

PHASE 1 — Core Idea

A specialized engine that:

- Uses intraday features (1m–15m intervals)
- Targets buy/sell/hold classification
- Retrains every 15–60 minutes
- Focuses on short-term volatility and reaction patterns

PHASE 2 — Core Differences

Feature	Nightly Job	Day Trading Job
Data frequency	Daily	Intraday (1m–15m)
Prediction target	1w/2w return %	Next-hour or same-day move
Model type	LightGBM regression	LightGBM classifier
Features used	Fundamentals + macro	Momentum, volatility, sentiment
Retraining	Nightly	Every 15–60 min
Holding period	Multi-day	Intra-day
Metrics	RMSE	Precision / Profit-factor

PHASE 3 — File Map

File	Clone	Notes
nightly_job.py	daytrading_job.py	Trim orchestration (live fetch + ML)
ml_data_builder.py	ml_data_builder_intraday.py	Add RSI_5, VWAP, etc.
ai_model.py	ai_model_intraday.py	Classify buy/sell/hold
continuous_learning.py	continuous_learning_intraday.py	Online updates per trade
train_lightgbm.py	train_lightgbm_intraday.py	Train classifier
insights_builder.py	signals_builder.py	Output intraday buy/sell signals

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PHASE 4 — Enhancement Modules

New File	Purpose
momentum_detector.py	Detect breakouts, VWAP bounces
orderflow_analyzer.py	Volume delta, bid/ask imbalance
sentiment_live.py	Rapid headline sentiment
trade_simulator.py	Test short-term trades for feedback
risk_manager.py	Stop loss, max drawdown, allocation

PHASE 5 — Key Day Trading Features

- RSI (2, 5, 14), MACD, VWAP, Bollinger Bands
- Intraday returns (1m, 5m, 15m)
- Volatility ratio ($\sigma 10m / \sigma 1h$)
- Volume delta, order imbalance
- Live sentiment pulse
- SPY/QQQ/VIX trend correlation

PHASE 6 — Learning Difference

Aspect	Nightly	Day Trading
Time horizon	Multi-day	Minutes–hours
Target	Regression	Classification
Feedback	Next day	Same hour
Factors	Fundamental	Technical
Objective	Accuracy	Timing precision

PHASE 7 — System Integration

- Nightly job = "core brain"
- Day trading job = "reflex layer"
- Share Rolling cache
- Separate models in /ml_models/intraday
- Scheduler runs every 30–60 minutes

Summary Cheat Sheet

■ Clone nightly pipeline files

■ Focus on intraday live data

- Train fast, small classifiers
- Output JSON signals
- Add enhancement modules for technical depth