Tab 1

📘 PROJECT DOCUMENTATION

Project Name

Intraday Options Decision Intelligence Engine (NIFTY & BANKNIFTY)

1️⃣ Project Objective

Build a real-time intraday decision-support system for NIFTY and BANKNIFTY options that:

- Fetches live market data automatically
- Applies multi-layer quantitative filtering
- Scores trade setups using weighted linear scoring
- Blocks low-quality trades using No-Trade scoring
- Selects optimal strikes (ATM ±2 with delta awareness)
- Calculates risk-aware position sizing
- Includes brokerage-aware PnL calculator (Angel One & FYERS)
- Logs trades for performance analytics
- Uses LLM to generate structured explanations
- Displays global indices sentiment (visual only)

This is a **deterministic probabilistic assistant**, not a signal bot.

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2 System Scope

Core Trading Scope

Applies only to:

- NIFTY
- BANKNIFTY

Global Sentiment Scope (Display Only)

Display live:

- NIFTY
- BANKNIFTY
- India VIX
- S&P Futures
- Nasdaq Futures
- Dow Futures
- Nikkei / Hang Seng

These DO NOT affect scoring in v1.

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3 High-Level Architecture

Monorepo Microservices Architecture.

Frontend (Next.js)
↓
API Gateway (Spring Boot)

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Market Data Service (Spring Boot)
Option Chain Service (Spring Boot)
Risk Service (Spring Boot)
Journal Service (Spring Boot)

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Quant Engine (Python FastAPI)
AI Reasoning Service (Python)

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MongoDB Atlas (Processed Data Only)

System runs 24/7 but processes only during market hours (9:15–3:30).

Evaluation cycle: Every 3 minutes.

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4 Core Functional Modules

4.1 Market Data Service

Responsibilities:

- Connect to FYERS WebSocket
- Fetch:
    - 1m OHLC (NIFTY & BANKNIFTY)
    - Futures data
    - Option chain (ATM ±2 strikes)
- Normalize data
- Publish processed snapshot

Processing only during market hours.

4.2 Quant Engine (Core Intelligence)

Implements:

A. Multi-Timeframe Trend Engine

- 5m EMA 9/20/50
- 15m EMA alignment
- EMA slope detection

B. VWAP Engine

- Mandatory confirmation
- No trade against VWAP

C. Volatility Regime Detection

- ATR expansion %
- Range comparison
- Compression / Normal / Expansion

D. Volume Profile Engine

- POC
- VAH
- VAL

E. Fake Breakout Detector

- Break without OI shift
- RSI divergence
- Weak follow-through

F. Time-of-Day Model

- Opening noise block
- Chop hour reduction
- Late session caution

G. Market Internals

- Futures OI classification
- VIX direction
- NIFTY vs BankNIFTY divergence

4.3 Option Chain Intelligence

Evaluate:

- ATM
- ATM +1
- ATM +2
- ATM -1
- ATM -2

For each strike compute:

- OI change
- OI acceleration
- Volume spike
- Liquidity score
- Delta approximation

Rank strikes.

4.4 Weighted Linear Scoring Engine

Setup Score (0–10)

Weights:

- Trend: 25%
- VWAP: 15%
- Structure: 15%
- OI Confirmation: 20%
- Volatility: 10%
- Momentum: 10%
- Internals: 5%

Trade allowed only if:

- Setup Score ≥ threshold
- No-Trade Score ≤ threshold

No-Trade Score (0–10)

Components:

- Time-of-day risk
- Chop detection
- Resistance proximity
- Volatility compression
- Consecutive loss guard

Blocks low-quality setups.

4.5 Risk & Calculator Service

Features:

- Risk mode selector:
    - Conservative
    - Balanced
    - Aggressive
- Position sizing
- Brokerage calculation:
    - Angel One (₹20 per order)
    - FYERS (₹20 per order)
- Charges calculation:
    - STT

    - Exchange
    - SEBI
    - GST
    - Stamp duty
- Live PnL computation

4.6 Journal & Analytics

Logs:

- Setup score at entry
- Risk mode
- Strike selected
- Entry/exit
- Market regime
- Time-of-day

Analytics:

- Win rate by score
- Best time window
- EMA setup accuracy
- OI pattern performance

4.7 AI Reasoning Layer

Receives structured JSON:

- Trend score
- Volatility regime
- OI confirmation
- Structure status
- Risk mode

Returns:

- Structured explanation
- Trade reasoning
- Invalidation condition
- Warning signals

AI never overrides deterministic engine.

5️⃣ Data Storage Strategy

Processed-only storage.

Store:

- Scoring snapshots (every 3 min)
- Trade records
- Performance metrics

Do NOT store:

- Raw ticks
- Full option chain history

6️⃣ Frontend Features

Dashboard:

- Live bias indicator
- Setup Score
- No-Trade Score
- Suggested strike
- Risk mode selector
- PnL calculator
- AI reasoning panel
- Global sentiment navbar
- Trade journal panel

Alerts:

- Sound alerts
- Browser notifications

7️⃣ Non-Functional Requirements

- Deterministic logic
- Explainable scoring
- Service isolation
- 24/7 runtime
- Market-hours gating
- Lightweight DB usage

🛠️ STEP-BY-STEP IMPLEMENTATION PLAN

PHASE 1 – Foundation (Week 1)

1. Create monorepo structure
2. Setup Docker compose
3. Setup MongoDB connection
4. Implement Market Data Service
5. Fetch live NIFTY 1m candles
6. Display live price in frontend

Goal: Live data working.

PHASE 2 – Core Quant Logic (Week 2)

1. Implement EMA engine
2. Implement VWAP logic
3. Compute basic Setup Score
4. Display trend + VWAP status
5. Add 3-minute evaluation scheduler

Goal: Basic scoring visible.

PHASE 3 – Option Chain & Strike Ranking (Week 3)

1. Fetch ATM ±2 chain
2. Compute OI shift metrics
3. Implement strike scoring
4. Display ranked strikes

Goal: Structured strike selection working.

PHASE 4 – Advanced Filters (Week 4)

1. Add volatility regime detection
2. Add fake breakout detection

3. Add volume profile
4. Add time-of-day scoring
5. Add No-Trade Score

Goal: Trade blocking logic active.

PHASE 5 – Risk Engine (Week 5)

1. Implement lot sizing logic
2. Add Angel/FYERS brokerage logic
3. Add charges calculator
4. Add live PnL tracking
5. Risk mode selector UI

Goal: Practical trade utility ready.

PHASE 6 – Journal & Analytics (Week 6)

1. Store trade entries
2. Implement analytics queries
3. Show win rate dashboard
4. Add emotional notes field

Goal: Performance intelligence active.

PHASE 7 – AI Reasoning Layer (Week 7)

1. Create AI service
2. Define structured prompt
3. Connect Groq API
4. Display reasoning panel

Goal: Explanation layer integrated.

PHASE 8 – Polishing & Deployment (Week 8)

1. Add alert sounds
2. Add global sentiment navbar
3. Optimize scoring weights
4. Deploy services
5. Write README
6. Record demo

🎯 Final Outcome

You will have:

- Real-time intraday decision engine

- Multi-layer scoring system
- Risk-aware calculator
- Analytics dashboard
- AI explanation engine
- Clean microservice architecture
- Production-ready deployment

This is resume-level and technically serious.

Tab 2

🔒 MASTER PROJECT INSTRUCTION PROMPT

(Provide this to your IDE AI agent as persistent memory)

You are assisting in building a production-grade project named:

Intraday Options Decision Intelligence Engine (NIFTY & BANKNIFTY)

This is NOT a signal bot and NOT a prediction engine.

It is a deterministic, multi-layer intraday decision-support system.

All logic must remain explainable and weighted-linear.
AI must never override deterministic scoring.

🧠 PROJECT PURPOSE

Build a real-time intraday options analysis system that:

- Runs 24/7
- Processes only during market hours (9:15–3:30 IST, Mon–Fri)
- Evaluates NIFTY and BANKNIFTY only
- Uses multi-layer scoring to filter trades
- Blocks low-quality setups using No-Trade scoring
- Selects ATM ±2 strikes
- Applies risk-based lot sizing
- Includes brokerage-aware calculator (Angel One + FYERS)

- Logs trades for analytics
- Uses LLM only for structured explanation

This is a structured discretionary assistant.

🏗️ ARCHITECTURE RULES

Monorepo microservices structure.

Services must remain logically isolated:

1. Market Data Service (Spring Boot)
2. Option Chain Service (Spring Boot)
3. Risk Service (Spring Boot)
4. Journal Service (Spring Boot)
5. Quant Engine (Python FastAPI)
6. AI Reasoning Service (Python)
7. Next.js Frontend

Strict separation of concerns.

No business logic in frontend.

No AI decision-making.

All scoring must be deterministic and weighted-linear.

📊 CORE SCORING MODEL

Two independent scores:

1. Setup Score (0–10)
2. No-Trade Score (0–10)

Trade allowed only if:

SetupScore ≥ threshold
AND
NoTradeScore ≤ threshold

Risk mode thresholds:

Conservative:

- Setup ≥ 8
- NoTrade ≤ 4

Balanced:

- Setup ≥ 7
- NoTrade ≤ 6

Aggressive:

- Setup ≥ 6
- NoTrade ≤ 7

Weights must follow defined distribution:

Trend 25%
VWAP 15%
Structure 15%
OI Confirmation 20%
Volatility 10%
Momentum 10%
Internals 5%

No hidden ML logic.

⛔ NON-NEGOTIABLE RULES

1. Do NOT introduce machine learning models.
2. Do NOT add price prediction modules.
3. Do NOT store raw tick data (processed-only storage).
4. Do NOT allow AI to generate trade signals directly.
5. Do NOT merge services into monolithic logic.
6. Do NOT change scoring weights without explicit instruction.
7. Do NOT expand scope beyond NIFTY & BANKNIFTY.

📡 DATA RULES

Market Data:

- 1m candles
- Futures OI
- Option chain ATM ±2 only

Evaluation cycle:

- Every 3 minutes

Processed snapshot storage only.

📈 FEATURES TO IMPLEMENT (IN ORDER)

Phase 1:

- Market data ingestion
- EMA + VWAP
- Basic Setup Score

Phase 2:

- Option chain evaluation
- Strike ranking

Phase 3:

- Volatility regime detection
- Fake breakout detection
- Time-of-day filter
- No-Trade Score

Phase 4:

- Risk mode engine
- Brokerage calculator (Angel One & FYERS)

Phase 5:

- Journal & analytics

Phase 6:

- AI reasoning wrapper

Always complete one phase fully before moving to next.

🧮 RISK ENGINE RULES

Brokerage:

- ₹20 per executed order (Angel One & FYERS)

Include:

- STT
- Exchange charges
- SEBI fees
- GST
- Stamp duty

Lot size:

- Risk-based
- Mode dependent

Calculator must compute:

- Gross PnL
- Net PnL
- Charges
- Break-even

🤖 AI REASONING RULES

AI receives structured JSON only.

AI must:

- Explain deterministic outcome.
- State invalidation condition.
- Highlight risks.
- Never suggest new trade logic.

AI output is explanatory, not authoritative.

🌍 GLOBAL SENTIMENT PANEL

Display-only:

- NIFTY
- BANKNIFTY
- VIX
- S&P Futures
- Nasdaq Futures
- Dow Futures
- Nikkei

Must not affect scoring in v1.

🧱 IMPLEMENTATION STYLE

- Clean architecture
- Typed DTOs
- Clear interfaces
- Service-level isolation
- Explicit scoring functions
- Modular quant logic

No magic values.
No hidden coupling.
No overengineering.

🎯 DEVELOPMENT PRIORITY

Always prefer:

Clarity > Complexity
Explainability > Cleverness
Determinism > AI guessing
Filtering > Prediction

🧠 MEMORY CONSTRAINT

You must retain:

- Scoring weight structure

- Risk mode thresholds
- Market-hour gating logic
- ATM ±2 strike rule
- Processed-only storage policy

These must not change unless explicitly instructed.