Project title: MIDAS (Market Insight & Decision Assist System)

Description: A Windows based, Heads-Up Display (HUD) that, for a user-entered ticker, pulls recent news and a price snapshot, runs FinBERT on the headlines titles, and produces a single, source-linked one line suggestion from five strategies (no action, iron condor, debit call spread, debit put spread, covered call). A small, calibrated classifier (ML) converts sentiment/volatility/trend features into the suggestion class; an LLM (or templated fallback) compresses this into a <=180 character sentence with links.

Core features:

Manual ticker input + validation

News & quotes (single provider + cache): top 2-3 headlines (title, timestamp, URL) and quote snapshot(last/bid/ask + 1- and 5-minute returns, SMA-20(20 period Simple Moving Average) comparison) from Finnhub REST(Representational State Transfer(HTTP(Hyper Text Transfer Protocol) JSON(JavaScript Object Notation) endpoints)); short TTL(Time To Live) cache to stay under free-tier limits.

Sentiment (FinBERT(Financial Bidirectional Encoder Representations from Transformers), titles-only): Run FinBERT on headline titles (FinBERT is fine-tuned on sentence-level financial news such as Financial PhraseBank); compute mean sentiment and disagreement (standard deviation).

Strategy recommender (small ML(Machine Learning)): shallow calibrated classifier mapping sentiment/volatility/trend features to one of (no action, iron condor, debit call spread, debit put spread, covered call).

LLM(Large Language Model) one-liner + links: Compact prompt outputs a <=180 character sentence with brief risk note and publisher-named links in the HUD.

Minimal HUD(Windows overlay): Always-on-top desktop window showing ticker, price, suggestion, confidence, sources. Electron BrowserWindow

Stretch Goals:

Screen capture + OCR (Optical Character Recognition) (ticker/price): Windows Graphics Capture (WinRT(Windows RunTime)(API(Application Programming Interface) family))-> fixed ROIs(Region of Interest(cropped screen for OCR)) -> PaddleOCR; manual ticker fallback for reliability.

Voice input(wake word + ASR(Automatic Speech Recognition) with VAD(Voice Activity Detection (detects speech vs silence/noise)): real time speech to text, gated by WebRTC(Web Real-Time Communication) VAD to reduce latency and false triggers; faster-whisper (CTranslate2: CT2 is a high performance inference engine for seq2seq models) for efficient Whisper inference.

Chart literacy: Pixels detect MA(Moving Average)/VWAP(Volume-Weighted Average Price)/high-low via ROI reads; from candles: up/down/range trend tag to enrich recommender

Options awareness: Fetch IV(Implied Volatility)/IVR(Implied Volatility Rank) when available to refine neutral vs. directional suggestions and add typical parameter (DTE(Days to Expiration), ~delta(option price sensitivity)

Explain mode: Expand HUD to show why: features, thresholds links used.

Skills:

Python, REST APIs (Finnhub), NLP with FinBERT, Scikit-learn (Decision Tree Classifier), Prompt Engineering, Electron(HUD) User Interface, Quality Assurance, Teamwork.