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Decision Support System for Dynamic Exposure Management Using Sentiment as Risk Signals

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Abstract

Risk management in financial markets is often implemented through simple, interpretable signals such as volatility. This paper proposes a decision support system for dynamic exposure management that incorporates a complementary sentiment-based risk signal: a confidence-adjusted sentiment index derived from Bluesky posts mentioning the NVDA ticker and classified with a DeepSeek LLM. Using NVIDIA as a case study from September 2024 to August 2025, the system evaluates transparent next-day exposure overlays based on rolling percentile thresholds: a volatility rule, a sentiment rule, and a combined rule integrating both signals. Exposure is allocated through three interpretable levels: 0, 0.5 and 1. The results indicate that sentiment-based and combined rules improve drawdown protection, suggesting that confidence-adjusted sentiment can complement volatility-based risk measures within transparent and reproducible exposure-management rules.

Keywords: *Decision support system; dynamic exposure management; risk signals; sentiment; financial markets.*

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