

FinBERT-FOMC

Fine-Tuned FinBERT Model with Sentiment Focus Method for Enhancing Sentiment Analysis of FOMC Minutes

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Dataset	Motivation	Base Model
Source: FOMC - Federal Open Market Committee Minutes from federalreserve.gov - January 2006 – February 2023 - Kim et al.'s dataset with 32,330 sentences Labels - Initial categorization by one person - Refined through collaborative labeling by two additional persons - Manual labeling of 3,535 selected sentences into 3 classes: <i>Positive, Neutral, Negative</i>	FOMC minutes (Central bank's communication) ↓ Delivering information and sentiment ↓ Affecting agent's expectations ↓ Changing market behaviors ↓ Impact to economy	Baseline: FinBERT (Araci, 2019) - Specialized, open-source Large Language Model (LLM) derived from BERT - Fine-tuned on various texts from the financial domain: news articles, corporate reports, regulatory filings Data Specifics - Corporate Reports (10-K, 10-Q) 2.5B tokens - Earnings Call Transcripts 1.3B tokens - Analyst Reports 1.1B tokens

Sentiment Focus

Solutions of new model: Two-step refinement for sentiment analysis:

- Text Simplification**
adjust sentence emphasis using keywords like “but” and “although”
- Shifting Sentence Focus**
ensure retention of segments likely containing primary sentiment by following contrastive conjunctions in complex sentences

Model Evaluation and Comparison

- FinBERT
- Text Simplification + FinBERT:
- Fine-Tuned FinBERT

Results

- Increased performance:** ↗ 4.7% / ↗ 2.4%
Fine-tuned model and Sentiment-Focus outperformed original FinBERT
- Efficacy Confirmation:** ↗ 12.2%
Sentiment Focus (SF) method effectively managed complexity and ambiguity
- Nuanced Sentiment Capture:** ↗ 17.6%
Fine-tuned model improved identification of nuanced sentiments in complex sentences

