

Financial Sentiment Analysis Using Large Language Model - FinBERT

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What ?

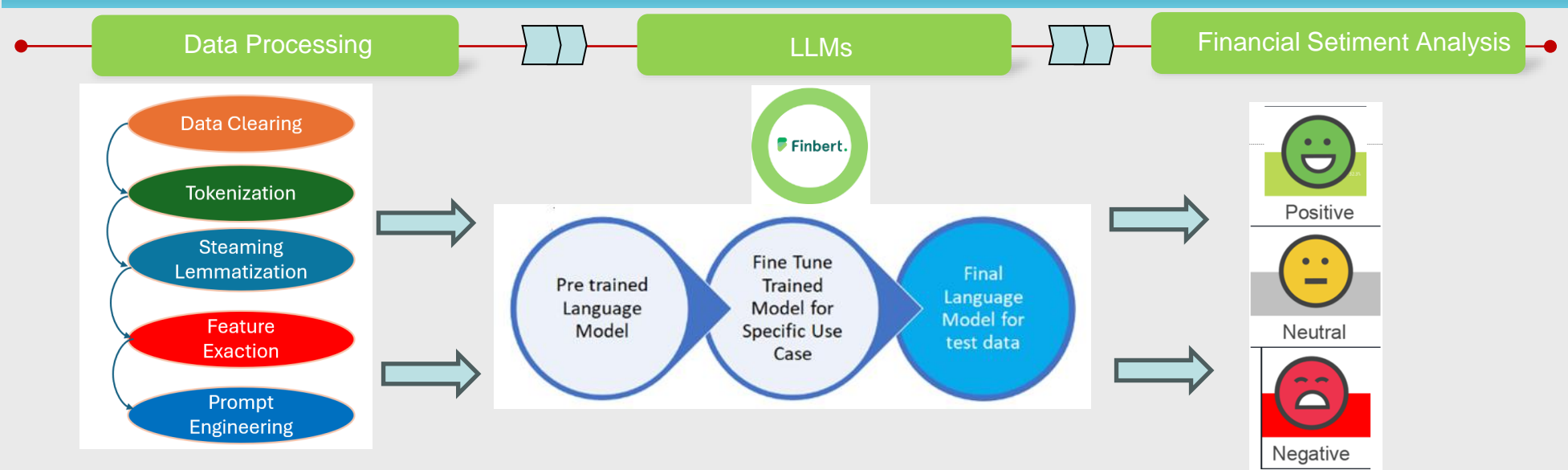
We introduce a framework to process and retrieve sentiments in financial text, in which we have:

- The research investigates the utilization of FinBERT, a state-of-the-art framework, for conducting financial sentiment analysis.
- exploring how large language models, such as FinBERT, can be leveraged to extract sentiment signals from financial data sources, including news articles, social media, and market commentary.

Why ?

- Social Media's Impact on Finance: Sentiment analysis is vital for understanding how social media affects investor behavior and market trends. Exploring tools like FinBERT can help us make sense of this influence.
- Better Decision-Making with Advanced Language Models: New language models like FinBERT are super smart with understanding text. By studying them, we can improve how we make financial decisions, which is pretty cool for students and anyone interested in finance.

Overview



Description

1. Data Processing

- Clean and prepare data to ensure high quality for model training and evaluation. This includes removing special characters, processing abbreviations, and normalizing text.

```
I love my dog      -> 001 002 003 004
I love my cat      -> 001 002 003 005
You love my dog!   -> 006 002 003 004
Do you think my dog is amazing? -> 007 005 008 003 004 009 010
```

Figure 1. Tokenization

```
{ 'amazing': 10, 'dog': 3, 'you': 5, 'cat': 6,
  'think': 8, 'i': 4, 'is': 9, 'my': 1, 'do': 7,
  'love': 2 }

[[4, 2, 1, 3], [4, 2, 1, 6], [5, 2, 1, 3], [7,
5, 8, 1, 3, 9, 10]]
```

Figure 2. Turning sentences into data.

3. Financial Sentiment Analysis

- FINANCIAL SENTIMENT ANALYSIS is done by applying logits estimation methods (e.g. soft-max logits) on the corpus space.

2. Fine Tune FinBERT

- Using the original BERT architecture and fine-tuning the parameters to suit financial data.
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- Fine-tuning: Using a dataset labeled (positive, negative, neutral) to fine-tune FinBERT for the sentiment analysis task.

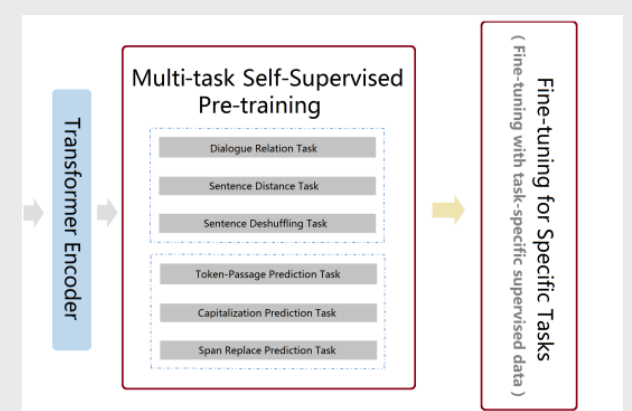


Figure 3. : An illustration of the architecture for FinBERT.

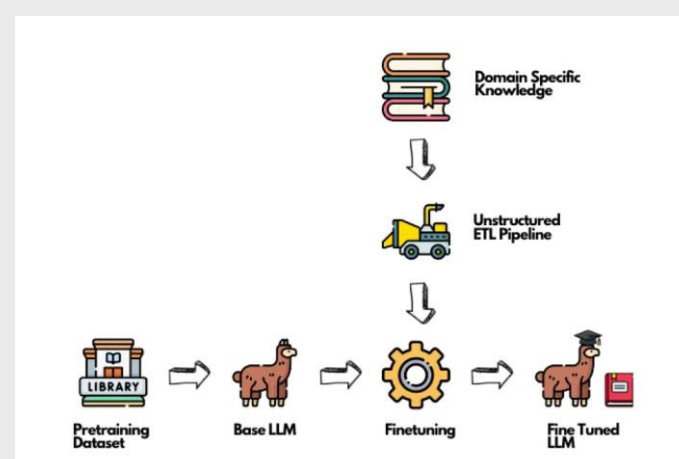


Figure 4. : An illustration of Fine-Tuning