



# FEAT: FROM FREQUENCY-BASED EMOTION ANALYSIS TO TRANSFORMERS

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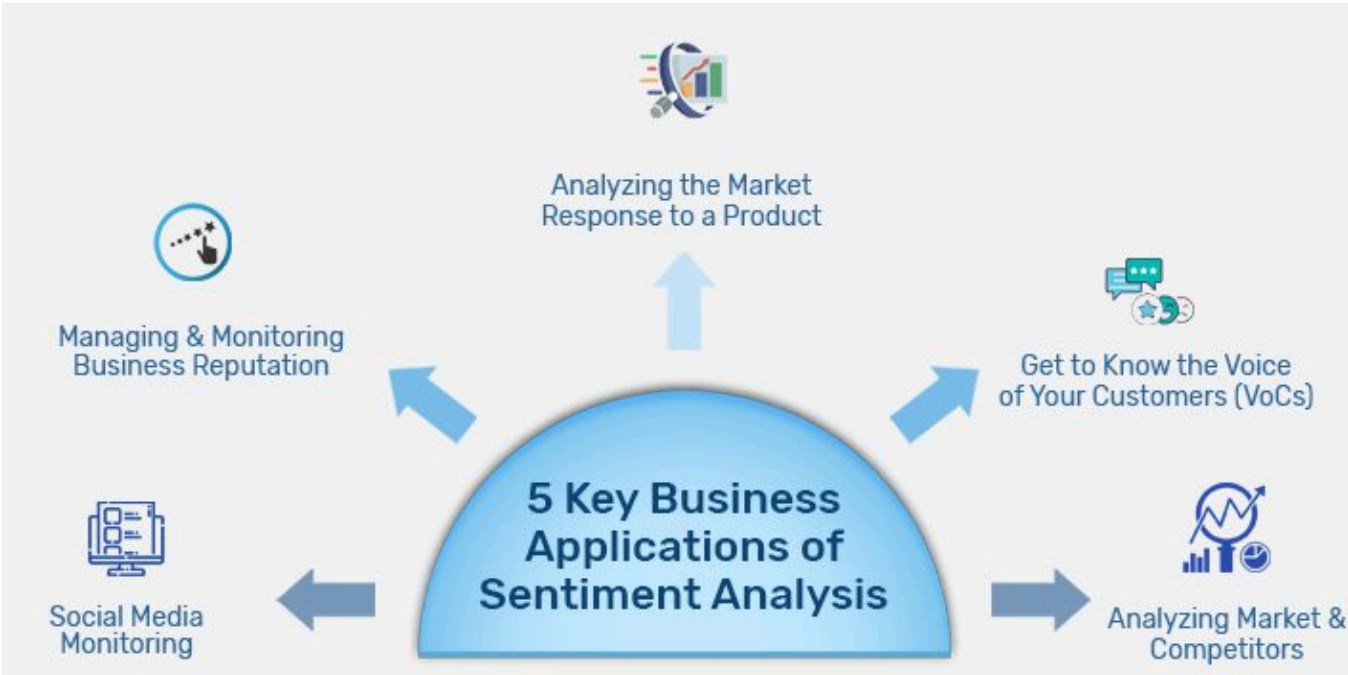
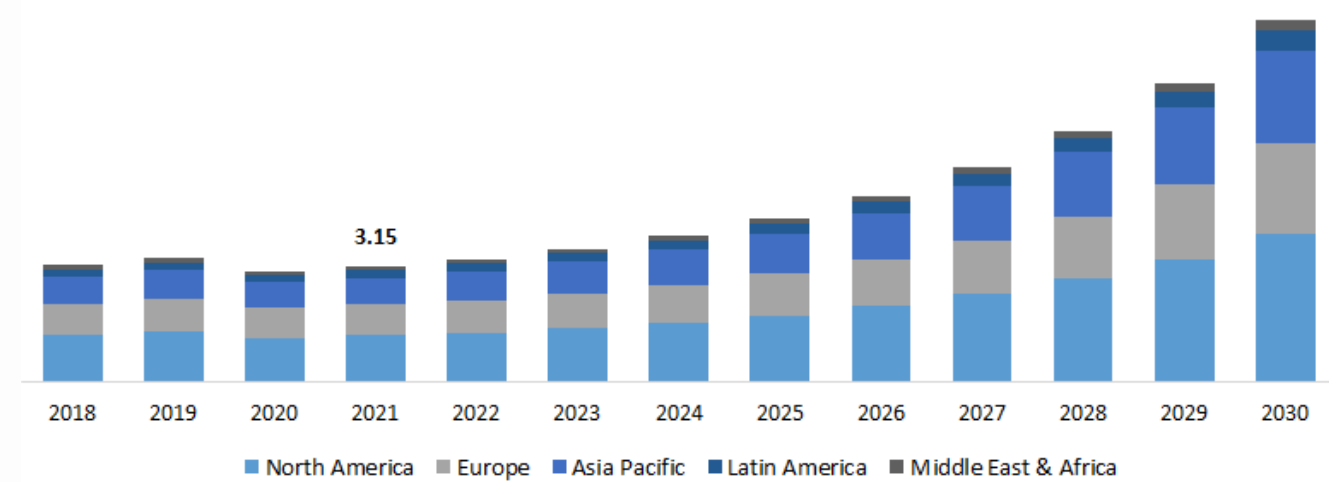


## Introduction

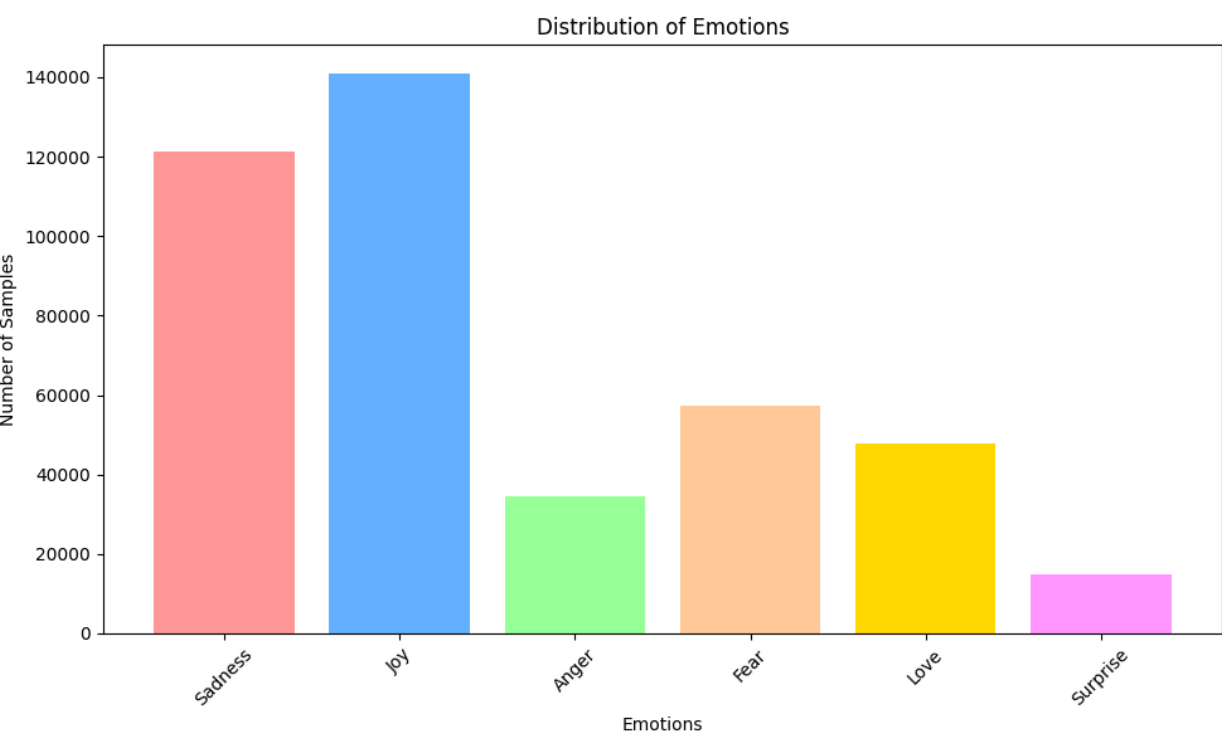
- Research Question:
- Emotions as conveyed through text need robust mechanism capable of capturing and modeling.
  - Transformers have the ability to capture meaning, is there a better approach?

## Background

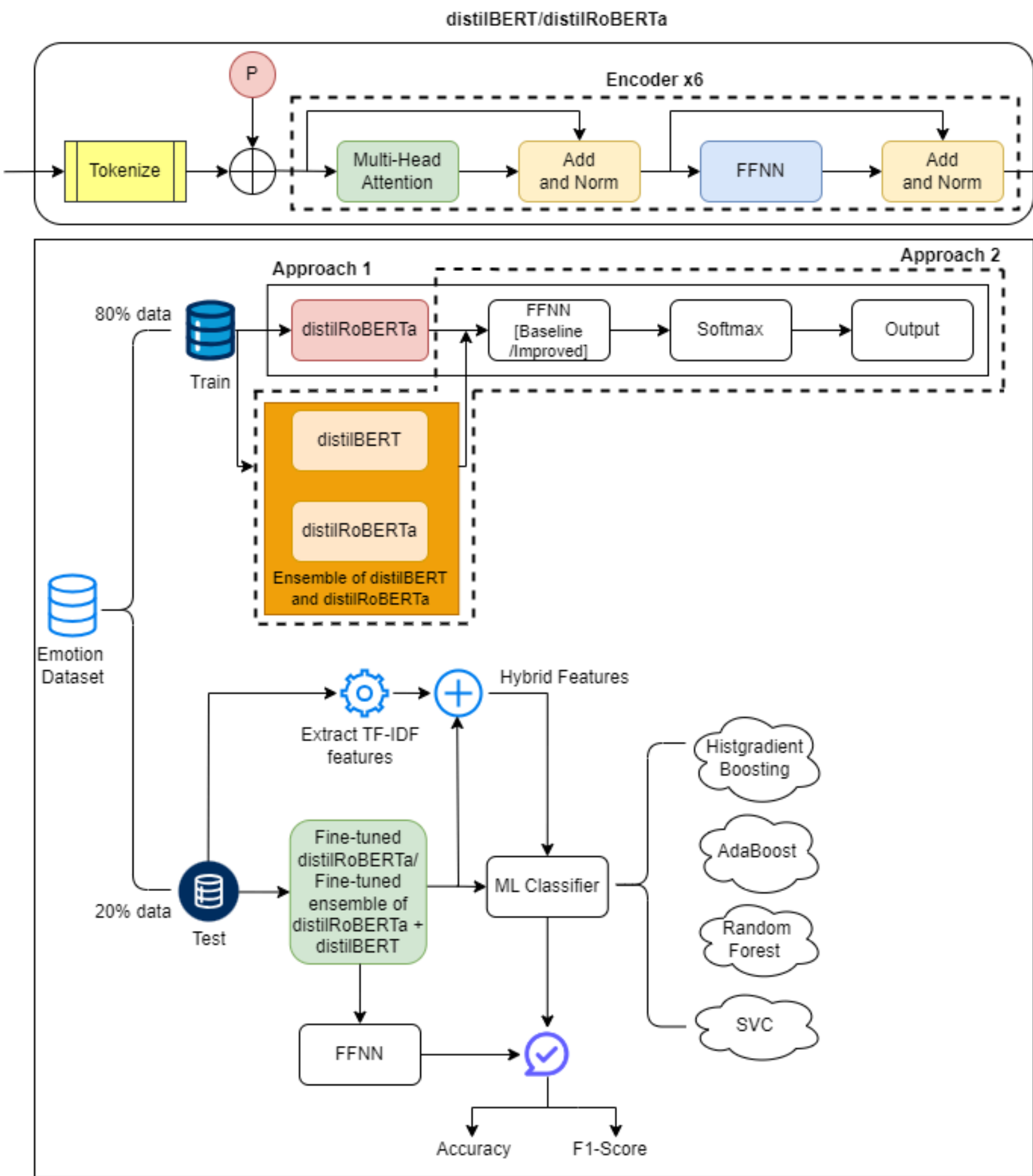
Sentiment Analytics Market Size, By Region, 2018 - 2030 (USD Billion)



## Data



## Methodology



## Evaluation/Results

Backbone	Classification head	Accuracy	F1
Backbone 1	Improved FFNN	0.9409	0.9103
	SVC	0.9454	0.9125
	Random Forest Classifier	0.9295	0.8919
	HistGradientBoostingClassifier	0.9313	0.8945
	AdaBoostClassifier	0.6787	0.4143
Backbone 2	Improved FFNN	0.9468	0.9133
	SVC	0.9501	0.9174
	Random Forest Classifier	0.9296	0.8928
	HistGradientBoostingClassifier	0.9344	0.9004
	AdaBoostClassifier	0.689	0.4151

## Conclusions

- Incremental improvements are attainable as demonstrated by our fusion of SOTA word embeddings with TF-IDF features yielding a modest enhancement over sole word embeddings. Secondly, the necessity to balance performance and cost is evident, exemplified by our comparison of baseline FFNN with ML models, where SVC emerged as a superior classifier despite the potential of more complex neural networks, which incur substantial time, space, and computational overheads.

## References

[1] Saravia, Elvis, et al. "CARER: Contextualized affect representations for emotion recognition." Proceedings of the 2018 conference on empirical methods in natural language processing. 2018.

[2] <https://www.polarismarketresearch.com/>

[3] reference: <https://www.datasciencecentral.com/top-5-key-business-applications-of-sentiment-analysis/>

[4] Talaat, Amira Samy. "Sentiment analysis classification system using hybrid BERT models." Journal of Big Data 10.1 (2023): 110.